# AND THE BOAT PUT OUT TO SEA (by Yivsam Azgad Weizmann Institute's spokesman )

The boats of Sabine Kacunko carry messages between the past, the present and the future.

Around half a century ago, Frank Herbert published a series of articles in the science fiction magazine *Analog* in which he discussed ways of understanding desert dunes or those found on Oregon beaches. In these contemplations, he crystallized the worldview that appeared in his magnum opus *Dune*, the series that influenced an entire generation around the world. *Dune*, in one sentence, is a planet in the throes of an ecological disaster from which there appears to be no salvation.
Pardot Kynes, the first ecologist on Arrakis (Dune, in the local tongue), is Herbert's mouthpiece for warning of the biological/ecological curse of Malthusian economics: "Beyond a critical point within a finite space, freedom diminishes as numbers increase. This is as true of humans as it is of gas molecules in a sealed flask. The human question is not how many can possibly survive within the system, but what kind of existence is possible for those who so survive."

Dune is a planet in denial when it comes to the limits of "what kind of existence is possible." Herbert describes a sort of ecological black hole collapsing in upon itself until, beyond a certain "event horizon," there is no turning back: No matter what you do, the conditions of life on its surface will only become more difficult. Kynes, if the truth be known, believes there is more water on Arrakis, and that it is still possible to turn it into a blooming garden. But it won't happen in the next few hundred years; it might only be possible after very many wise men try with all their might to fix what one imbecile has ruined.

*Dune* is the story of people waging a battle both for and against the planet on which they live. And it is also the story of the ways (the exceedingly strange ways, sometimes) in which the world affects its inhabitants. The complex interrelations Herbert describes are something like those between a dog and the fleas in its fur. Kynes again: "A system maintains a certain fluid stability that can be destroyed by a misstep in just one niche. A system has order, a flowing from point to point. If something dams the flow, order collapses. The untrained might miss that collapse until it was too late." These words were written long before chaos theorists came up with the "butterfly effect." When Herbert wrote this speech in 1963, the United States was still producing eight-cylinder cars with ten- or twelve-liter engines. Huge quantities of dangerous pesticides were still being sprayed onto fields; harmful chemicals used on animals were ending up in great quantities on dinner plates; and the idea that anyone would protest the use of CFCs in spray cans seemed as fantastic as the science fiction world of *Dune*.
The relations between humans and their planet are also the subject matter of the German multimedia artist Sabine Kacunko, who lives and works in Berlin. The works she recently showed in Berlin, Seoul, Paris and Beijing, she calls "boat-messages." Through her small, modest fleet of "boats," she tries to make clear to us the direness of our situation. But the boats, like any sea-going vessel, are tossed by waves, swept up in currents, and sometimes they have to anchor in strange ports to avoid a coming storm. Boats have also been known to sink, but why go there? It is better to avoid painting too black a picture, but rather to act as though there is hope, that we can still do something to prevent the impending disaster.

On September 11, Kacunko was staying in New York, and the destruction of the Twin Towers by followers of Osama Bin-Laden brought home to her what she had always known, what we all always know, but sometimes forget: How small we are in comparison to the world. So small, there is no real difference between us and bacteria. In essence, the most significant disparity is in seniority. The bacteria were here way before us, and will almost certainly remain long after we are gone. Kacunko wanted to know how they do this. How they have survived for so long. If we can understand this, she thought, maybe we can copy their survival techniques.

Scientists seeking an answer to a basic question go back to test the basics; they look for the onset of the phenomenon they are investigating. Kacunko wants to understand how bacteria organize their communication and live together with plants, people and other creatures. She decided to begin her research journey at the beginning: with such mechanisms of life as the regulation and communication techniques of bacteria. Bacteria are quite intelligent organisms. They know how to find food, and to avoid danger. They know to lie low and hide out until a bad situation passes. They know when their surroundings improve, taking this as a sign to step up the pace of reproduction. People, in contrast, don't always show the proper restraint. They multiply even when it is clear that the system can't sustain their numbers. They consume poisons and trade in them. In fact, they don't hesitate to poison their entire environment.

In the first stage of the project – the launching of the first boat-message – Kacunko decided to employ bacteria to destroy the old world: the negatives of black-and-white photos of herself. She grew bacteria on a substrate of film emulsion, and in this way, the bacterial colony destroyed the memory of the past. In the next phase, a scientist friend helped her isolate the sugar — the fuel created by the bacteria. She then projected the resulting images from buildings and onto others. This gigantic projection gave the bacteria – or, more correctly, their traces – dimensions that placed them on an equal footing with humans.

The second boat set sail waving the flag of the present. Here, Kacunko used grains of dust which had once been thought to be "cosmic dust" that somehow arrived on Earth from other worlds. These grains were collected in the south of Italy and sent in a small glass vial, in 1832, to the "prince of science," Alexander von Humboldt. Humboldt then turned them over to the Natural History Museum in Berlin, where they remain to this day. Today, we know that the source of those dust grains is not so distant: It was blown by wind from the Saharan desert (In fact, recent research shows that dust from the Sahara supplies vital minerals for healthy plant growth in Europe and across the Atlantic Ocean, in the Brazilian rain forests).

Kacunko managed to convince the museum's curators to hand over a few of the antique grains, which she brought to her then-partner, microbiologist Prof. Wolfgang Kromberg of Oldenberg University. From the ancient patina coating the grains, he succeeded in extracting bits of the microorganisms that form it and in reconstructing the molecular sequence of their ribosomes' small units. The visual representation of this microscopic unit then became an element in Kacunko's project, *Life Flag*, which illustrates the unity of fate of all Earth's creatures.
"Ribosomes are the common components of all plants, animals and humans in the world," she says. "Without ribosomes there is no life; we see that, at the most basic, deepest level, all of us inhabitants of the planet are brothers. We share this same basic part – meaning the differences between us are not so great, and meaning that what we have in common is extensive, significant and crosses dividing lines. And if so," she continues the thought, "why, indeed, can't there be peace in the world?"

Since a flag (as opposed to the ribosome) is something that separates peoples, Kacunko decided to design a flag bearing images of ancient ribosomes from the Sahara. She then requested permission to raise this flag over various diplomatic consulates in Berlin. "Many agreed immediately," she says. "There were those who asked for time to consult with their governments for instructions. And there were some that refused. Israel's embassy, by the way, was definitely one of the good ones. Three embassy staff, headed by the cultural attaché, even came out to be photographed, at my request, under the flag."

This work was first exhibited in the Robert Koch Forum in Berlin (where Koch first revealed the tuberculosis bacterium), accompanied by the Humboldt Philharmonic Chorus performing – under the direction of Prof. Constantin Alex – a musical selection created by transforming the sequence of the ancient ribosome to musical notes.

Time has passed, world peace has not been achieved, and the entire globe still faces a severe ecological disaster, prompting Kacunko to send off a third boat – a strong message, a sort of final warning. This message she called *Han Hai* – the ancient Chinese name for the Gobi desert meaning "dry sea." *Han Hai* is an interactive video installation based on microscope images of the microorganisms trapped in the patina coating grains of desert sand from the Gobi region, as well as images of various molecular components that were extracted from these microorganisms by the scientists who are partners in her work.
These images – pictures of ancient desert life forms – are fed into a computer in which are installed programs written especially for this exhibit, and which she has referred to as "visual atoms" – building blocks from which the computer builds the dynamic exhibit that confronts the viewers.

The work opens with the image of a peaceful, idyllic scene of desert patina. And if no one were to enter the gallery, things would remain this way, unchanging. But people do come into the gallery, and from here on, wheels begin to turn. A video camera that records the people entering the gallery sends the information to the computer, which processes it such that as the number of people in the gallery rises, the primeval environment begins to eat itself. This process continues to a point of self-destruction generated by a population density that the environment is not able to sustain. In the words of the fictional ecologist, Kynes: "Beyond a critical point within a finite space, freedom diminishes as numbers increase."

This is really a sort of economic insight. A resource is a resource. There is no difference, in principle, between natural resources, environmental resources and economic resources. When you consume more than you have – when you squander your resources – you can try to keep the system going by creating what is known today as a "bubble." But bubbles (as we have been learning) always burst. And when they burst, things can get out of control, causing large amounts of damage that require a lot of time to repair. Like

Nouriel Roubini and Peter Schiff, economists who predicted today's world economic crisis, Sabine Kacunko tries to warn us of an upcoming ecological crisis. If we reach a situation in which our planet begins to eat itself, it will eventually move on to a different model of existence in which it is not at all certain that humanity will have a place.

Thus, Sabine Kacunko launches three boats in our direction in her monumental work, *Bootschaft*. Three boats carrying three messages – to, by and about the past, the present and the future. And the future, as they say, does not look rosy, and certainly not assured. As these three boats are tossed by waves and currents, we must batten down the hatches and propel the oars, and learn to cooperate with the forces of nature. If not, we we'll never reach the port we call home.
Credit: Yivsam Azgad, 2011

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