

## FUTURE TECHNOLOGIES

Each city can help people from overpopulation, in the fight against environmental disasters, as these cities will be designed for almost 100 per cent use of renewable energy sources, such as the sun, tides, air and biomass, cities also collect and purify water and even collect rainwater. It is easy to say that these cities will give indescribable beauty to the world [1].

There are several concepts of floating cities, each of which has its own peculiarity. Let's look at a few such cities. Green Float was conceived by the shimizu corporation and it was designed as a carbon-neutral city. Green Float is comprised of a bunch of islands that are connected. At the center of each island would be a 1.000-metter tall eco skyscraper that would have multi-uses including office space, residences, and a vertical farm. Each Island would float across the Pacific Ocean and would house between 10.000 to 50.000 people. With all the Islands combined, about 1 million people could call green float home.

X Sea TY was proposed by the company X-TU and is not only a floating city, but could also contribute to the restoration of the environment. To produce biofuels, the city would be covered with photosynthetic algae. The city also would also absorb carbon from the atmosphere and then pump out oxygen to improve air quality as well as the ocean. The buildings would be built with a hive-like design for the algae to grow proving the floating city's ability to reduce pollution.

With China hosting a large percentage of the world's population, companies like the China Communications Construction Commissioned the at design office to create a floating city to help relieve the population congestion. While it is still all just in the planning phase, at created something marvelous. The floating city would be 150 meters in length and would sit upon pre-fabricated hexagonal modules. The city would be energy efficient and green with farms and hatcheries so that the city could provide its own food. There would also be the possibility to underwater roads, parks, stadiums, everything a city needs, all on a buyout landmass.

Silt Lake City was designed by a team of student architects consisting of margaux leycuras, marion ottmann, and anne-hina mallette. They created a floating "hydropolis" that focuses on flood control in the Nile valley, and it would be located on lake Nasser. Instead of building dams or walls, Sit Lake City would divide the water body and sit modular cities on

top. Then, when flood season begins, the cities would ride the tide of the flooding instead of getting destroyed. The cities would have offices, homes, agriculture, and energy generators to keep things functioning.

Designed by Aleksandar Joksimovic and Jelena Nikolic, Noah's Ark got an honorable mention in the 2012 skyscraper competition. Noah's Ark is a sustainable city that can support all forms of life from humans to animals, insects, and fish. Using cables that connect to the ocean floor, the city would have stability as well as protection from harsh winds by using a wall. To get the energy to function, the sustainable city used the wind and solar power. Noah's Ark would also use connecting tunnels to travel to travel to the main land, which means that civilization really isn't too far away [2].

We are surrounded by microorganisms. They are so tiny that we do not notice them, but even such small creatures have genes that encode protein synthesis. Imagine that a bacterium has met a virus. In order not to die from a foreign organism that has penetrated inside, the bacterium turns on its immune system. It is based on CRISPR = Clustered Regularly Interspaced Short Palindromic Repeats, and between them are spacers (separators) with genomic virus fragments (unique portraits of those with which this bacterium has already encountered). So the cell remembers the intruder, and cas9 protein helps to fight them. When viral genes enter the cell, a mechanism is started to compare its genes with those sites that are already in CRISPR. And when an identical or very similar spacer is found, the Cas9 protein cuts the DNA of the virus. Scientists figured out how to use this mechanism to edit the genome of larger organisms and even people. Imagine that we need to detect a mutant or undesired nucleotide sequence and precisely cut it from DNA. It is with this task that Cas9 protein can cope, if you show it in advance what to look for. When the DNA fragment is cut out, the cell will try to repair the breaks, and if you add copies of the necessary genes, then at the time of repair the cell will include them in its DNA. This technology theoretically allows for hereditary diseases [3].

Genetic engineering must change the world around us and ourselves. This is obvious and hardly anyone will argue. The only question is when this will happen. Genome alteration technologies have always been complex and expensive. But the new CRISPR / Cas9 gene exact editing technique seems to change the situation soon [4].

Professors Edgar Lobaton & Alper Bozkurt of North Carolina State University are harnessing the frenetic nature of flying cockroaches to help map out hazardous or hard-to-reach areas. They have developed a combination of hardware and software that draws virtual images of disaster-stricken places, like a building that is in danger of collapsing.

Sending rescuers into a space that is structurally unsound (like a building that has sustained fire damage) puts them in as much danger as trapped survivors. For this reason, researchers have been exploring alternatives that keep humans safe. The insect-like miniature sensors perform reconnaissance to map out the treacherous space completely before rescuers can be sent in. Previously, Professor Bozkurt developed functional cockroach biobots (pictured) as a first step to realise the design concept and now the accompanying software and radio technology allows researchers to test the project in practical scenarios. The tiny biobots (or UAVs – unmanned aerial vehicles) fly around the unfamiliar area and draw a reliable yet rudimentary virtual image of the space for first responders to use as a strategic model. The biobots work in contrast to a drone that is controlled remotely by a human, being guided instead by a mobile UAV beacon. These insect-cyborgs swarm around a radio beacon that sets a parameter for them to stay in. Once one section of the unknown space has been mapped out adequately by the flying sensors, the beacon can be moved to a new section of the space and the process is repeated [5].

Yuri Dmitriev invented the Bio Robot Refrigerator refrigerator, the principle of which is based on luminescence cooling the biopolymer gel in which the products should be stored. The incoming ultraviolet radiation is converted into visible light in it, which provides cooling due to the difference in wavelength. And where to hang the magnets?

There are no shelves or drawers in the refrigerator of the future. This is a relatively small (about 4 times less than its modern “colleagues”) cabinet with a glass door and a single piece of green biopolymer gel inside. It is important that the gel does not stick to the products and does not spoil them. Today it’s hard for us to imagine how apples and bananas will “float” in the air bubbles inside the gel. All this looks surreal, it is even more difficult to imagine how “fish”, for example, raw fish, meat or minced meat will “lie” next to it. Although it is quite possible that this will not seem strange to people of the middle of the century.

Since the bio-refrigerator stores the products in a non-sticky gel, a capsule is formed around each product, which prevents the mixing of odors and the penetration of bacteria. Even the meat will not need to be frozen, and everything can be stored in one place, since the refrigerator, after recognition, will be able to select an individual temperature regime for each product. The concept of the refrigerator of the future Electrolux Bio Robot Refrigerator is a super creative idea of the designer Yuri Dmitriev. Perhaps this is too unrealistic an idea to be true, but fantastically beautiful so that Electrolux is not interested in it, and we, ordinary consumers, so passionately dreaming to look into our future [6].

Medic John Bradford, president of Spaceworks, an American company, is engaged in the development of space technologies, and in particular, ways to bring the human body into suspended animation for long flights across our Galaxy. His team is already successfully practicing the method of therapeutic hypothermia, when the body is slowly cooled to temperatures of 32-34 degrees Celsius by about 1 degree per hour. This slows the heartbeat and reduces blood pressure. Medical equipment used for therapeutic hypothermia can be easily converted to automatic mode and used for space flights. So we looked at 5 technologies of the future, but this is only a small part of those technologies that I could demonstrate to you and which are waiting for us soon. Using these technologies, we were convinced that a bright future awaits us, because each innovation has huge advantages for mankind, starting from a new place of residence, ending with the environment and human health, this is an undoubted contribution to the future life of mankind, because even one technology can include everything what is needed for humans and the environment.

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