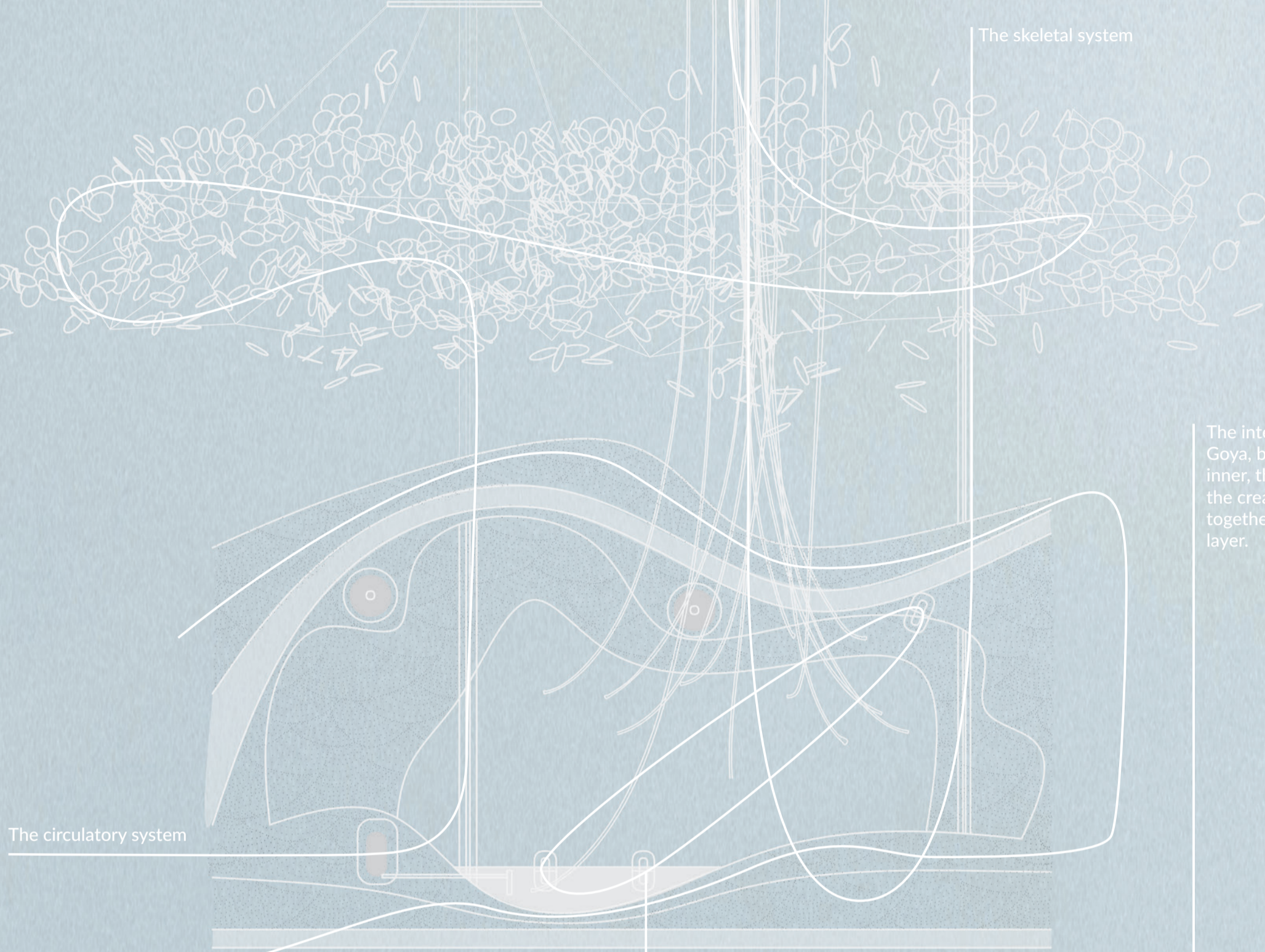


The proposal is a productive system made by combining photovoltaic panels, hydrogen production, fuel cells and biological fuel cells. Goya is a simple creature, that unlike the human (that has 12 main systems working together), it is merely comprised of 4 : a circulatory system, a skeletal system, an integumentary system and an immune system.



The skeletal system



The circulatory system

The integumentary system

The immune system

The integumentary system is the skin of Goya, both outer, the sand-dunes, and inner, the moss from the caves. They are the creatures largest organ, and work together as a protective and a productive layer.

Solar balloon made by photovoltaic fabric filled with hydrogen float high above. During the day they harvest solar energy and convert it to photovoltaic current which is stored in batteries. The batteries are protected underneath the outside layer, seamlessly integrated into the landscape. A small part of the generated current goes to active fuel cells that decompose water into hydrogen by electrolysis. The caves are fitted with lagoons, which are essential for both maintaining the climate and humidity of the cave, but also the serve as tanks of water for the fuel cells. This produced hydrogen keeps the solar balloons afloat. During the night the process reverses. The fuel cell recovers its hydrogen and as it reacts with oxygen, it starts producing water and electric current. The plot is fitted with 6.000 square meters of solar balloons, estimated to produce 231.000 kWatts.h per year.

The translucent solar panels cover larger areas of the plot, and beyond providing a significant amount of energy production, it acts as a light shader for both humans and the tops of the caves, where the batteries are stored. It is a fail-proof system of energy production that acts as a back-up and discharges directly in the local power grid. The 17.500 square meters of transparent solar cells are estimated to produce a 343.600 kWatts.h per year.

The skeletal system the structure of it all that becomes gradually lighter as closer to the surface as it gets. Starting from the main steel structure that shaped the dunes and creates the caves, it then converts into groups of thin steel pillars that hold together a network of cables onto which the transparent solar panels are placed. These pillars also double down as connectors for the circulatory system, providing the route for the cables to the batteries. Lastly, the highest elements are the fibre optic light cables that lightly hold into position the Solar balloons. These cables provide extra light in the caves during daytime.

Goya

the aesthetics of renewable dreams

24500 square meters become public space and a public refuge. The outside skin consists of natural sand dunes held together by locally adapted vegetation. A few pathways and high points are highlighted and designed, as well as entry and exit points and resting areas, but the vast majority of of the plot is left for the wind to design and optimise. High points are devised in order to give views to the nearby Al Raha Creek. On the site live energy productive solar systems that also serve to provide local shade on the upper layer, and local light in the manufactured "caves". More than a park, the proposal is a conversation between inter-species materiality. Man is invited to contemplate these productive giants and rejoice under their protection.