PHOTOCATALYTIC

LEAF



Master in Advanced Architecture
Introductory Studio - Solar Machines

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Iaac



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01_PROBLEM

POLLUTION


Greenland
Iceland
Russia
Kazakhstan
Mongolia
Afghanistan
Pakistan
Iraq
Iran
Saudi Arabia
Algeria
Libya
Egypt
Mali
Niger
Nigeria
Chad
Sudan
Ethiopia
Kenya
DR Congo
Tanzania
Angola
Namibia
Botswana
South Africa
Madagascar
Indonesia
Papua New Guinea
Australia
Brazil
Peru
Bolivia
Argentina
Venezuela
North Atlantic Ocean
South Atlantic Ocean
Indian Ocean

BARCELONA





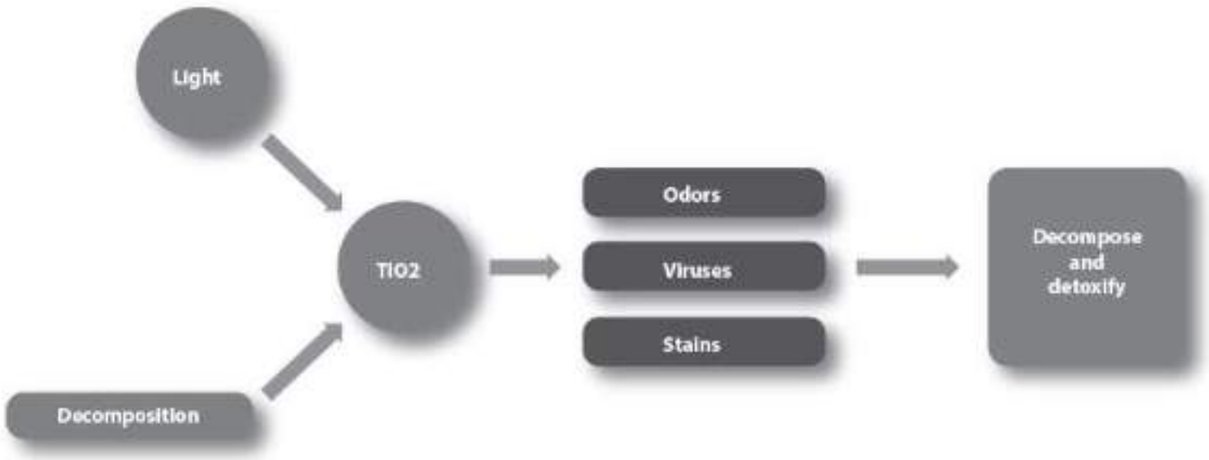


02_PHENOMENON

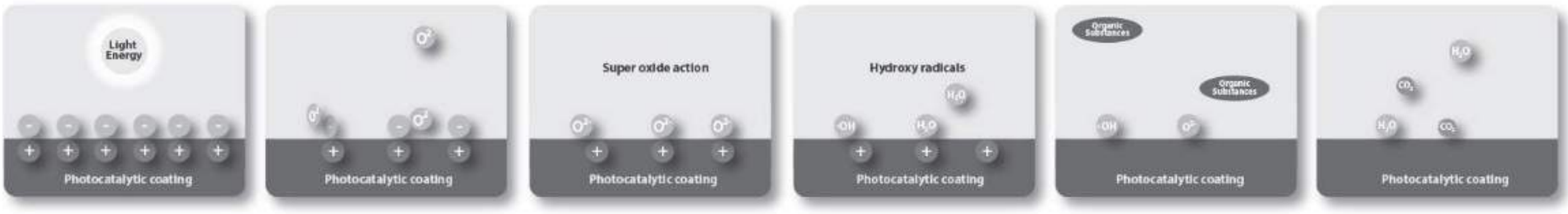
PHOTO

CATALYSIS + SYNTHESIS

Mechanism of **photocatalysis**

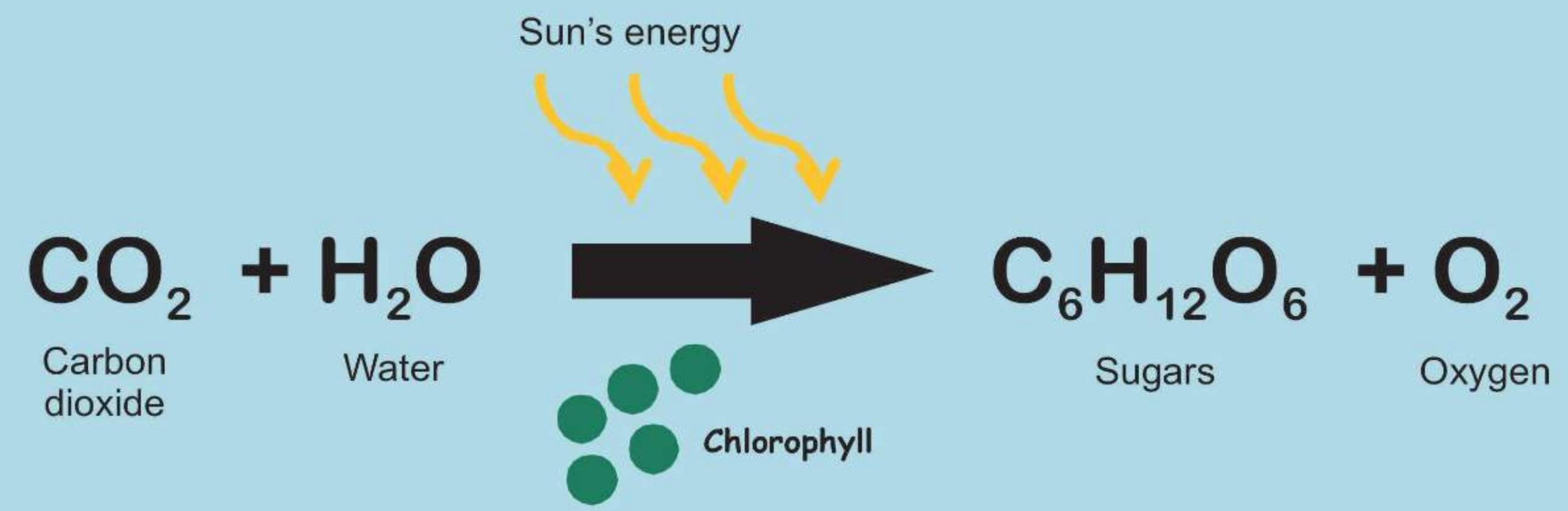


Principle of **photocatalysis**



PHOTOCATALYSIS

Principle of **Photosynthesis**



PHOTOSYNTHESIS

SOCIAL

air pollution



solar machine



technology



phenomena



location



impact



activating public spaces



intelligent furniture



all weathers



greenery



interaction with people



music



lighting



03_SITE

JUNCTION OF RAMBLA DE POBLENOU AND PLAYA DEL BOGATELL



\+ +

Existing Amphitheatre, Ample - Sunlight, Sea Breeze, Human Interaction & Planted Trees - Grid Pattern

\- -

Lack of public furniture, Lack of buffer zone from the street, air, noise and vehicular pollution, transition space



SITE SELECTION :

Availability of maximum Solar Radiation

Underutilized Public Space

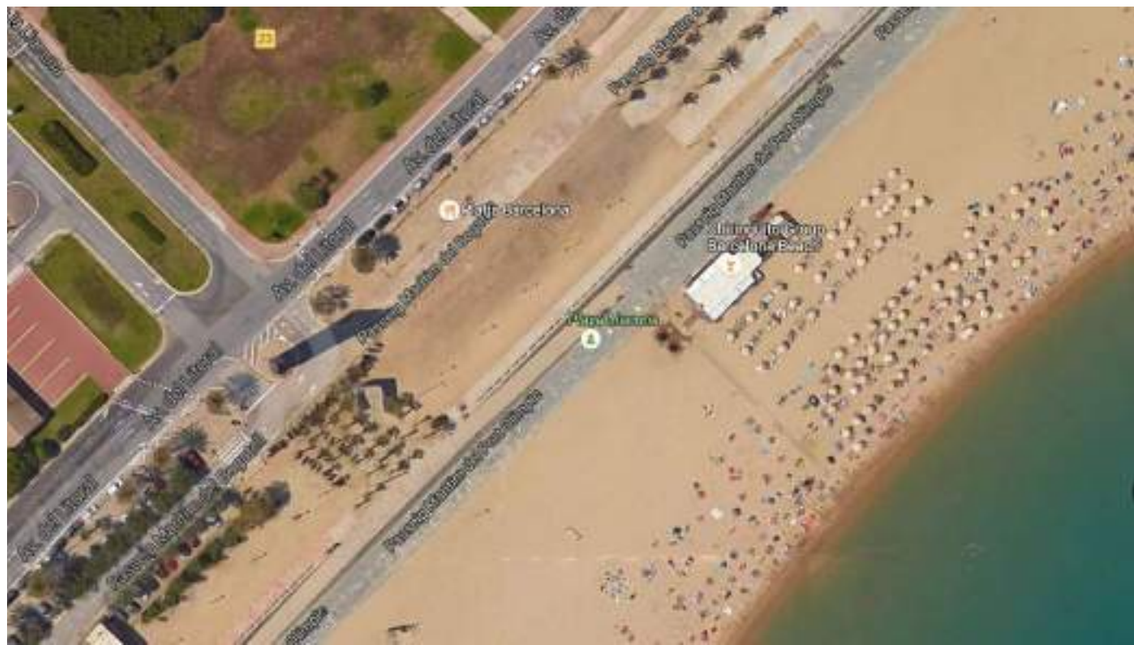
Pollution

Optimum Wind Flow

Natural Plantation



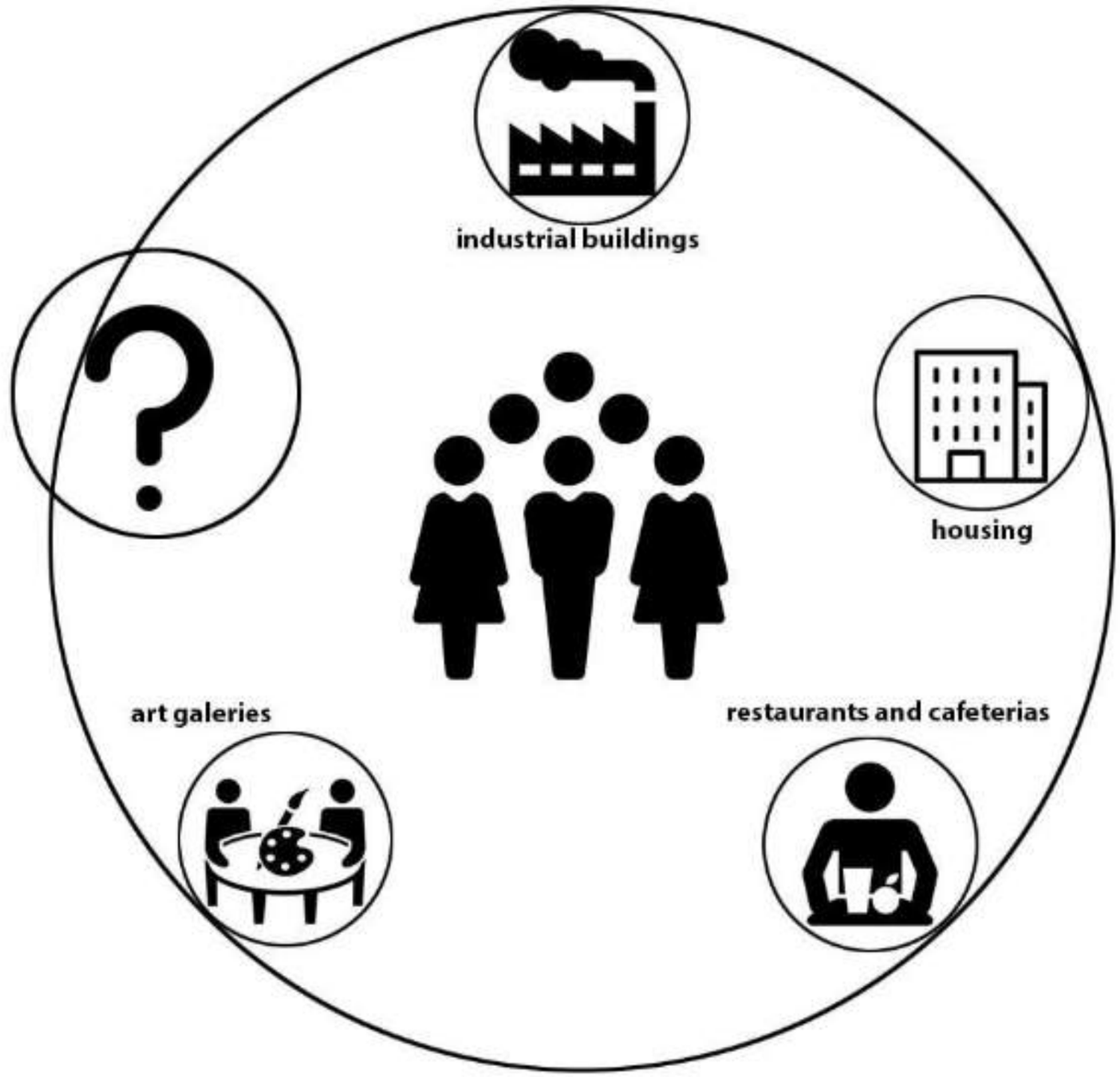




EL POBLENOU

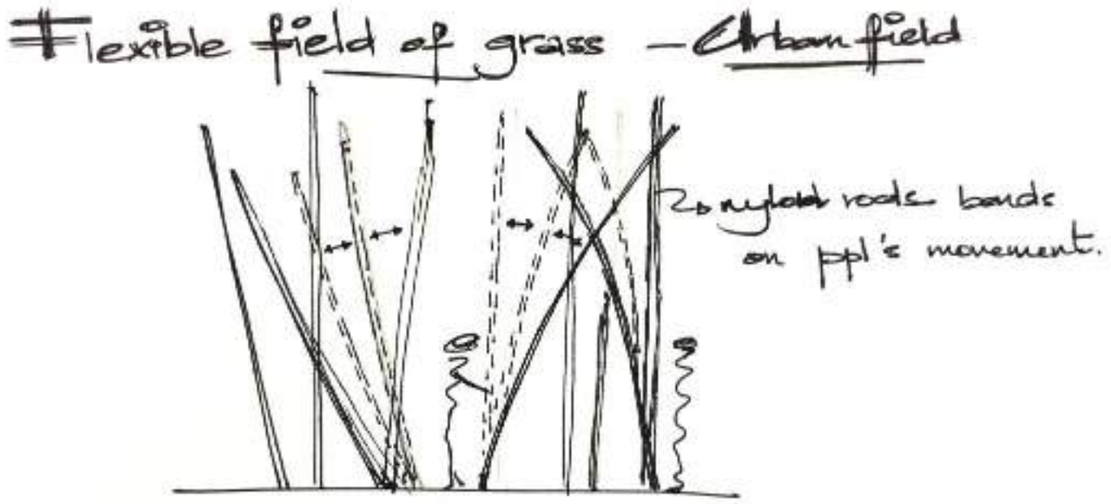


Environmental Analysis of El Poblenou



In El Poblenou, there is a lack of social space. The district is full of industrial buildings, housing unit, art galeries restaurants, cafeterias etc. In terms of social human necessities , there is no place to respond these necessities.

04_REFERENCES

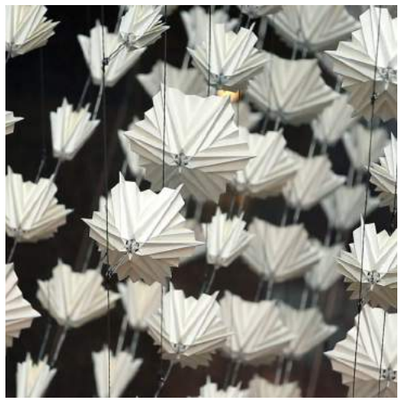


SWAY'D

The Salt Lake City installation is composed of more than 1,000 moly-filled nylon rods, each one over 10' tall.

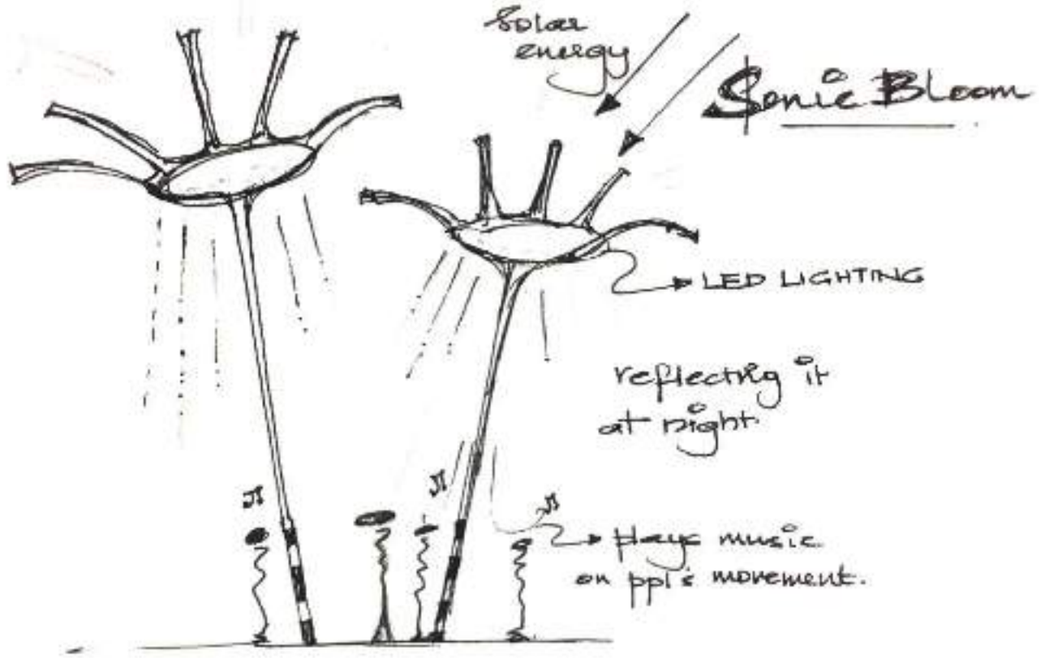
People are invited to walk through the urban field and interact with the flexible rods that bend and undulate — mimicking grass or trees blowing in the wind.







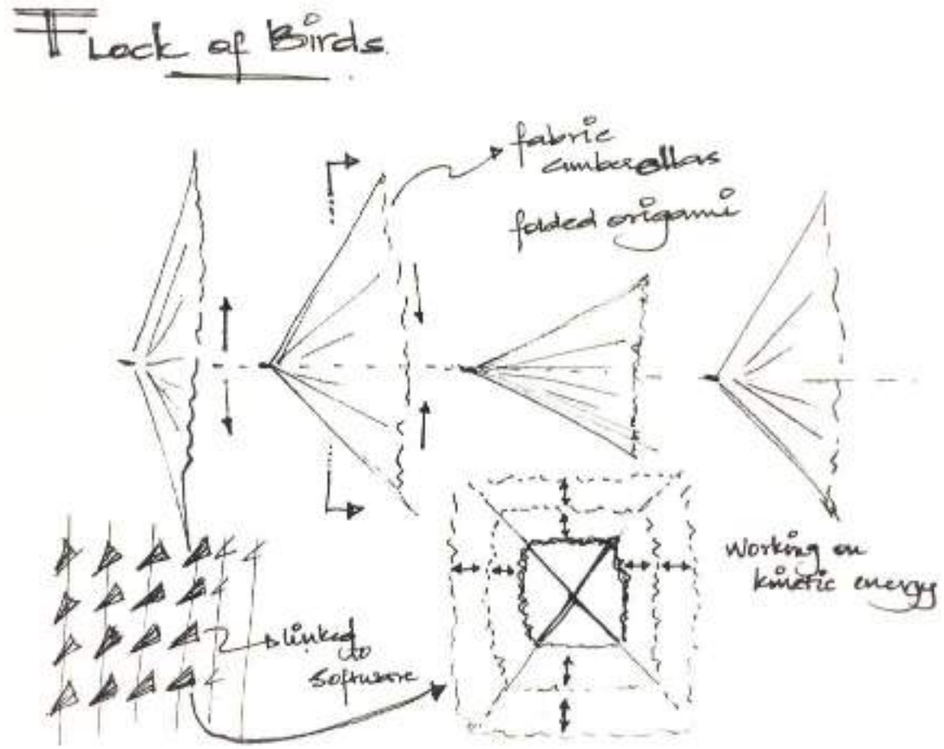




SONIC BLOOM

The development of renewable energy systems, five giant solar flowers absorb the sun's energy – reflecting it at night with patterned LED lighting.

Mounted on the top of each painted flower head are made photo voltaic cells & sensors located in each flower are triggered by people's movement.



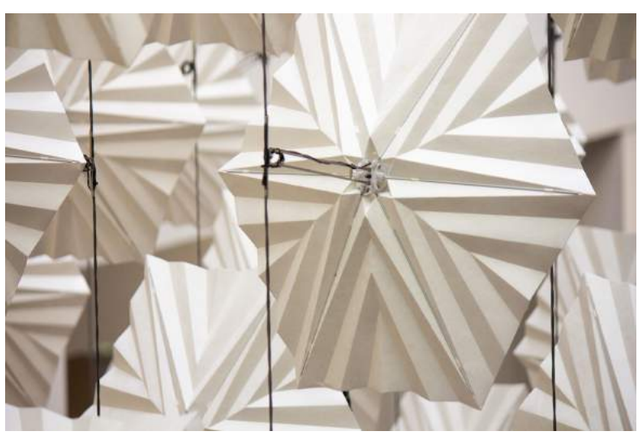
AN INVISIBLE FLOCK OF BIRDS

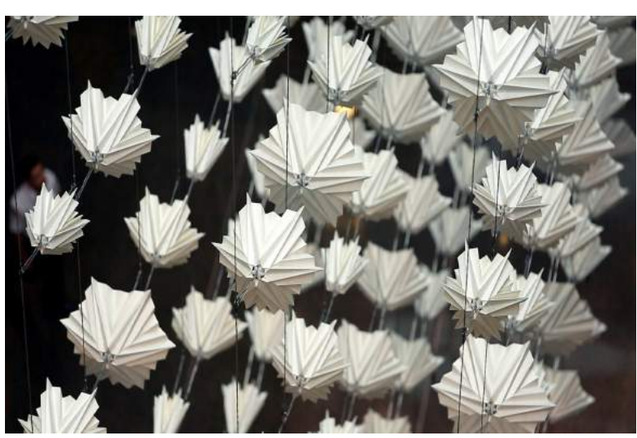
The sculpture celebrates the organic beauty of collaboration by visualizing the movements of an invisible flock of birds.

Each element can independently open and close, controlled by custom software running a flocking algorithm.









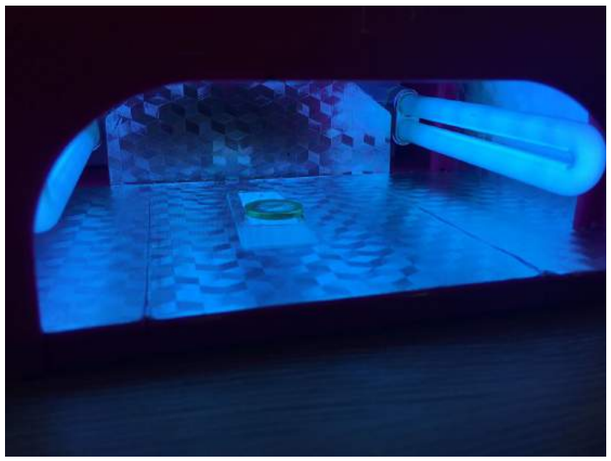
05_EXPERIMENTATION

We experimented with a number of tests using different mediums & varied percentages of **TiO2 - Photocatalytic Reactions**


UN 2789
Quimics Dalmau



1. TiO2 & Acetic Acid - applied a thin layer on a glass slide - passed it through UV light















Observation :

- Surface area of TiO2 was less

- Exposure to UV Light was very irregular



2. TiO2 & White Paint - different ratios - applied on strips of wood - passed smoke through a bottle with the stick inserted - exposed to sun light

