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Model Making 2024
The Cities of Akuam

Project outline

Who is it for?

Imagine a fantasy movie that takes you to an underwater world, where the buildings are alive and ever-changing. They are not made of bricks or steel, but of organic and biomechanical materials that can grow and adapt. The city is home to humans who dwell in pods that serve as their apartments. These pods can detach and reattach to form new complexes, or even travel across the ocean floor on their own. This is the vision and intention that the models will communicate to the audience.

These models would be used by the movie producers. I'd be working with the concept artists and the production designers. The models will be photographed and the environment will be added digitally.

What is it?

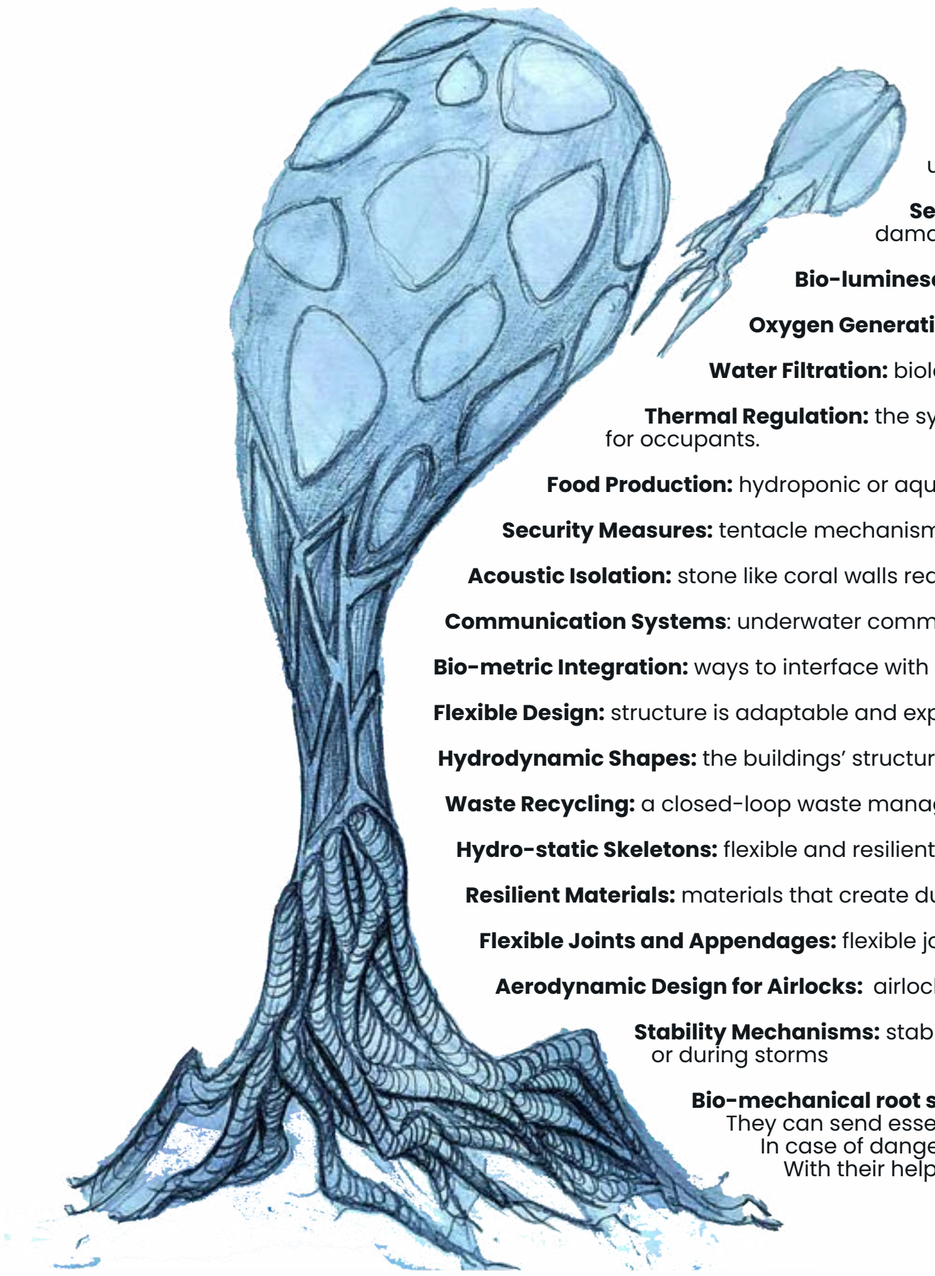
A concept design model for a movie of an underwater world where the buildings have an organic appearance and humans within have evolved to be able to live and thrive in symbiosis with the underworld.

The innovative underwater towers are designed to seamlessly integrate with the marine environment. This bio-mechanic architecture is constructed with a variety of robust yet organic shapes that form a towering structure beneath the sea. Each unit within the towers are a versatile space, equipped with horizontal platforms that serve as functional floors for various applications. The structures of Akuam are not just buildings; they are self-sufficient underwater cities, offering spaces for living, working, recreation, and commerce, all while harmonizing with the ocean’s natural beauty.

Why has it been made?

To visualize the design and style of the movie before filming and to communicate the vision and intention of the movie.

People have built these buildings using a combination of biotechnology and nanotechnology. Biotechnology is the use of living organisms or their products to create or modify materials, devices, or processes. Nanotechnology is the manipulation of matter at the atomic or molecular scale to create new structures, properties, or functions. By using these technologies, people can create biomechanical systems that are partly organic and partly mechanical, and that can adapt to the underwater environment and coexist with the aquatic life.



Travel pods or detachable habitats have the features of the main buildings and can grow into being new cities just like the ones they moved away from

Marine Observation: transparent viewing areas to allow occupants to observe marine life and ecosystems, promoting appreciation for the underwater environment.

Self-Repairing Materials: The building's structure could incorporate materials that can self-repair using biological or chemical processes when damaged by water pressure, corrosion, or other underwater elements.

Bio-luminescence: bio-luminescent organisms provide natural, energy-efficient lighting inside the structure, reducing the need for artificial lighting.

Oxygen Generation: photosynthetic organisms like algae continuously generate oxygen, ensuring a breathable atmosphere for occupants.

Water Filtration: biological filtration systems that purify seawater for drinking, bathing, and other domestic uses.

Thermal Regulation: the system regulates the interior temperature, potentially using heat exchange with the surrounding seawater, to maintain comfortable conditions for occupants.

Food Production: hydroponic or aquaponic systems for growing food, or even incorporate spaces for cultivating edible marine life like oysters, clams, or kelp.

Security Measures: tentacle mechanisms protect the structure by movement from potential threats, such as aggressive marine life, extreme weather events, or unauthorized access

Acoustic Isolation: stone like coral walls reduce noise pollution and protect from the surrounding marine environment, allowing for a peaceful living environment.

Communication Systems: underwater communication systems maintain contact with the surface and other underwater structures.

Bio-metric Integration: ways to interface with the human body, such as using bio-metric sensors to monitor health and well-being in the underwater environment.

Flexible Design: structure is adaptable and expandable to accommodate changing needs and emerging technologies.

Hydrodynamic Shapes: the buildings' structure is streamlined, hydrodynamic shapes to reduce resistance to water currents and improve energy efficiency

Waste Recycling: a closed-loop waste management system that converts human waste and organic matter into usable resources, such as fertilizer or energy.

Hydro-static Skeletons: flexible and resilient materials that mimic the hydro-static skeletons of invertebrates, allowing the building to withstand water pressure changes.

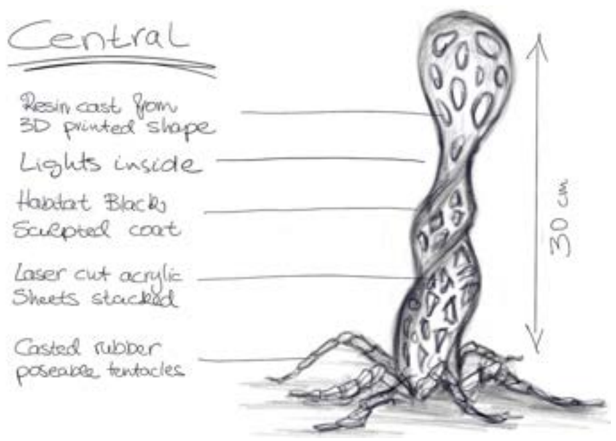
Resilient Materials: materials that create durability and resistance to saltwater corrosion

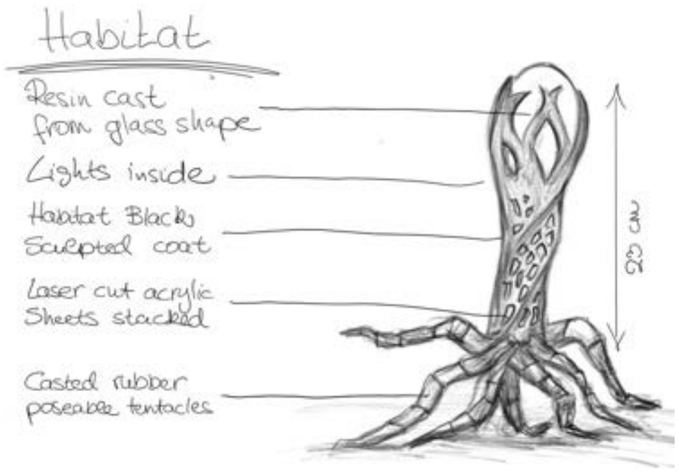
Flexible Joints and Appendages: flexible joints and appendages inspired by octopuses or other cephalopods for versatile and adaptable structural elements.

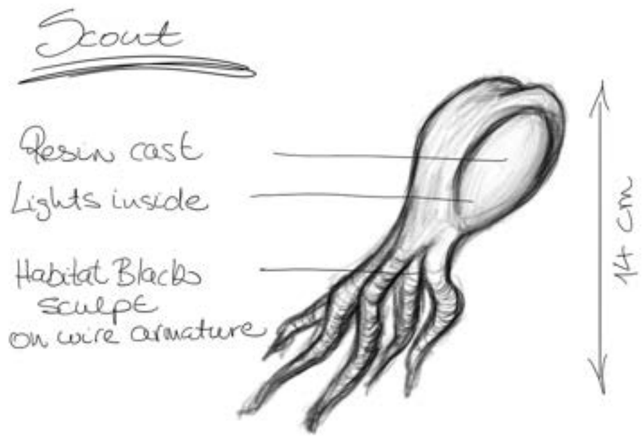
Aerodynamic Design for Airlocks: airlocks for human access, aerodynamic design principles to minimize water exchange during entry and exit

Stability Mechanisms: stabilization mechanisms inspired by marine creatures like seashells or puffer fish to ensure the building remains stable in strong currents or during storms

Bio-mechanical root system: Buildings can communicate with each other through their bio-mechanical tentacle system - 'roots'
They can send essential information or matter
In case of danger people can travel between these passages
With their help the buildings are able to move to more suiting environments







Central

- Most developed city
- Mainly stationary but can move slowly if needed
- Offers spaces for living, working, recreation, and commerce
- It’s top pods are detachable apartments, opening opportunities to travel and discover

Habitat

- Well developed city
- Mostly stationary but moves easily in need of a better environment
- Central hall offers meeting points, parks and recreation

Scout

- Swimming building, very mobile
- Can move quick and collect information about the environment to further develop the features of the cities
- Collects and/or analyses samples and specimens from any depths of water level
- More robust and flexible
- In search for new matching habitats / environment
- Also a habitat, temporary or permanent
- It has the ability to develop into a Central