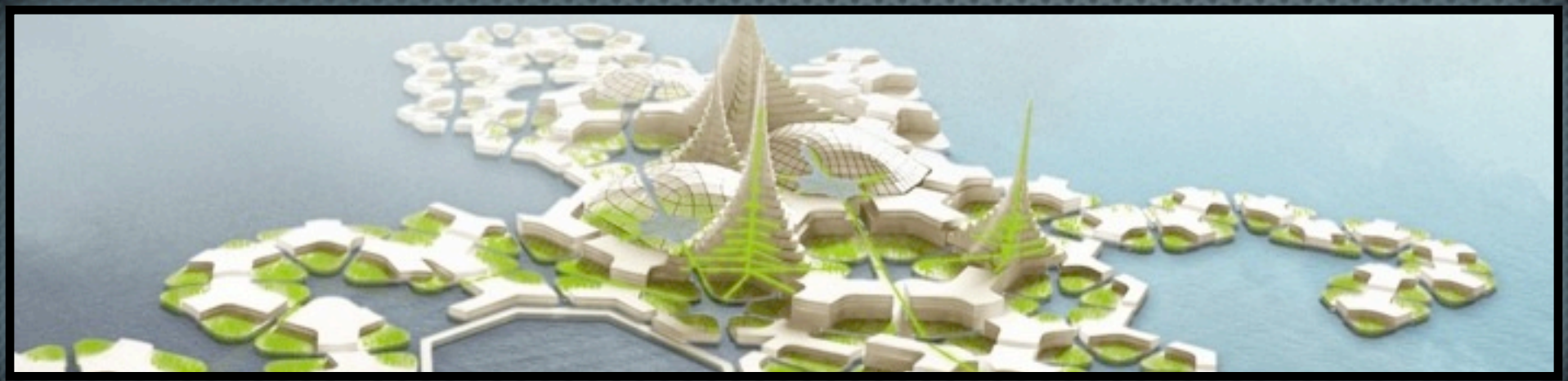
SEASTEADING CITY THEORY

GUS PONSTINGL

D R A F T

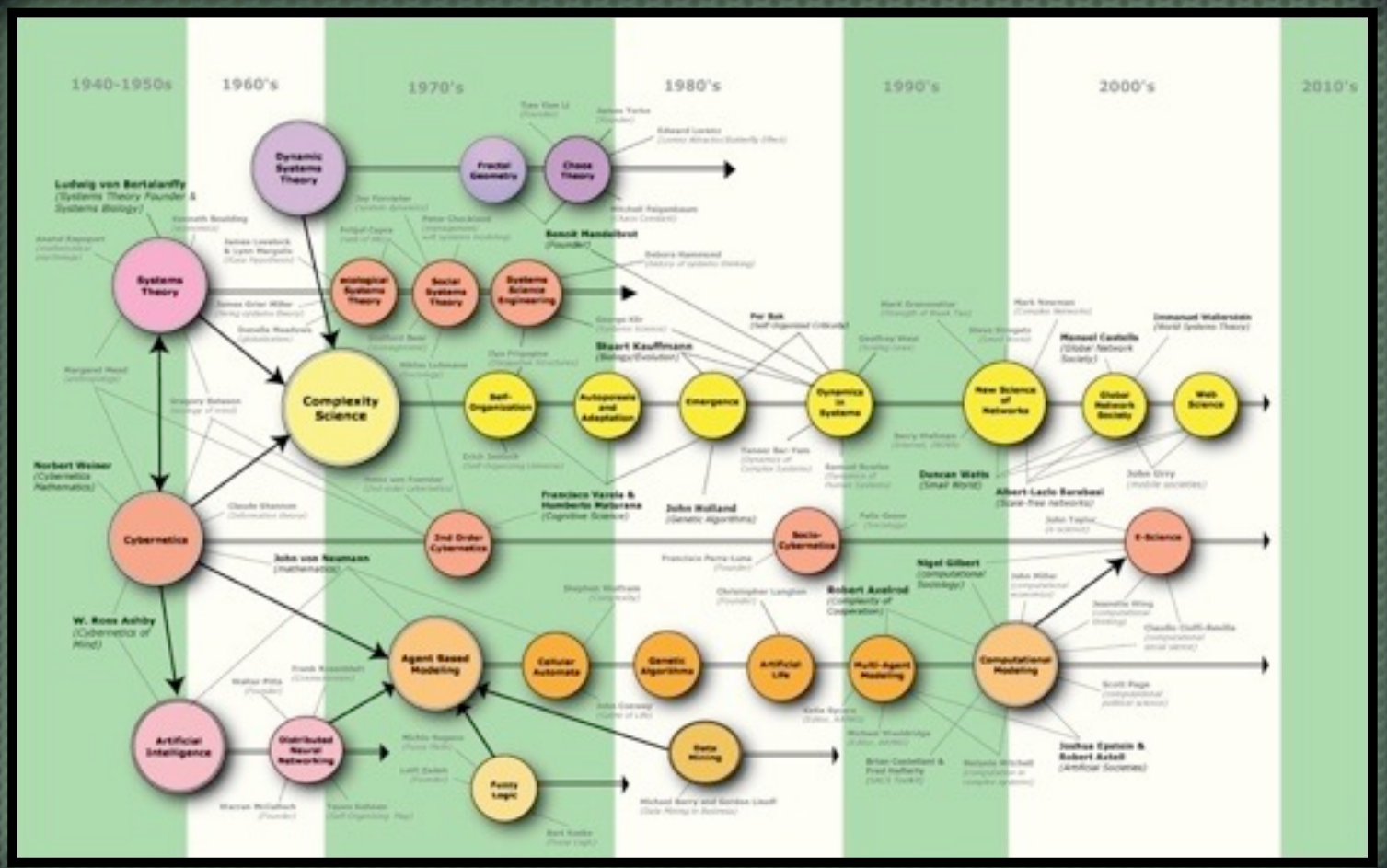
WHATS WRONG WITH THE SEASTEADING PROTOTYPES?

THEY ALL SHARE SAME FUNDAMENTAL PROBLEMS



- NOT TRULY FRACTAL
- NOT MICRO-SCALAR
- BASIC UNIT(s) UNDEFINED & UNWORKABLE
- NOT FINANCIALLY PRACTICAL
- MONO-LITHIC NATURE
- WASTED SPACE (EXTREMELY INEFFICIENT)
- NOT BASED ON HUMAN BEHAVIOR PATTERNS
- CONDUCIVE TO BIG GOVT.

THEORY



My understanding of City Theory comes from my combination of Jane Jacob's Theories, Christopher Alexander's Pattern language and the sciences of Chaos Theory and Complexity Theory. There wasn't (isn't) a well defined Complex Theory of cities, so I've adopted as much as I could from those theories. We'll explain Complexity Theory as necessary to get the basic concepts.

AREN'T ALL CITIES ARE MADE OF SIMPLE BUILDING BLOCKS?

The first mistake understanding a City is reducing the complexity of it into simple building blocks. This can be seen in games like Sim City. The key to understanding a city is to accept that a city is more complicated than we can imagine. It is far more complicated than the human body. And while many parts are simple and easy to identify, the more deeply you delve into the components that make those simple parts, the more complex and hard to grasp Cities become.

WHAT IS A BUILDING BLOCK?

Most people understand the concept of building blocks. We see this in all structures. Bricks are used to build foundations and wall exteriors. Sticks of 2x4's are used to construct the frame of a house. Sheets of drywall are used to cover the walls. Even the pyramid is made from large stones. With bricks, stones and 2x4's, the building blocks are more or less homogenous and uniform in consistancy.

MONO-LITHIC

Mono-lithic describes a building or entity that is carved from a single mass of stone (or other material). The word constructed cannot be used, as it is not a combination of parts.

In Ethiopia there is a town called Lalibela, where a group of eleven monolithic churches stand. They were carved from single mass of rock. The stone was literally cut away from around the structure to create a solid building. Much like a sculptor creates a statue from a block of stone.

WHAT IS A COMPLEX BUILDING BLOCK?

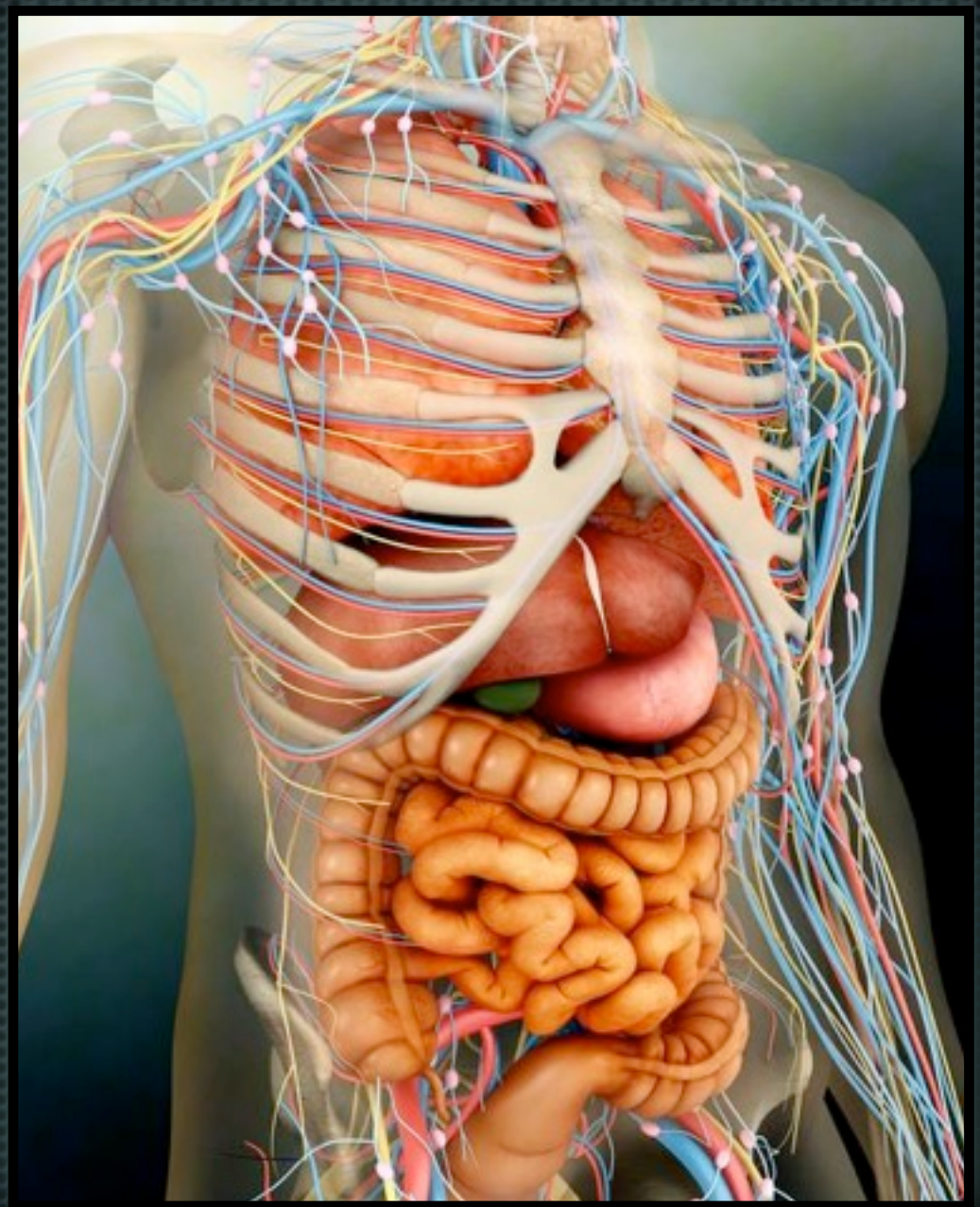
VS

A complex building block is very different from a simple building block. A Clay House Sculpture is an example of mono-lithic, simple structure. But, a real house is constructed from many thousands of smaller parts. Many of which are very complicated. Both could be used as 'building blocks' for designing a city. The clay house in a 'miniature' city model, and the real house in a real city. The definition of what I refer to as **complex building blocks** is object composed of many interconnected parts, compounded and composite. Characterized by a very complicated or involved arrangement of parts, units, etc. It is so complicated or intricate as to be **hard to understand** or deal with.

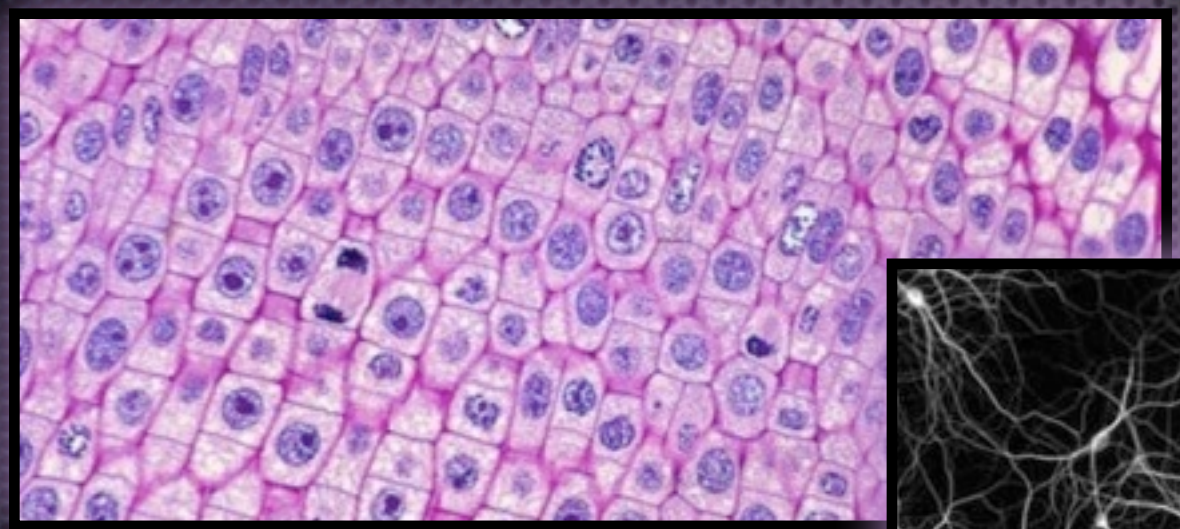
AN EXAMPLE: THE BODY

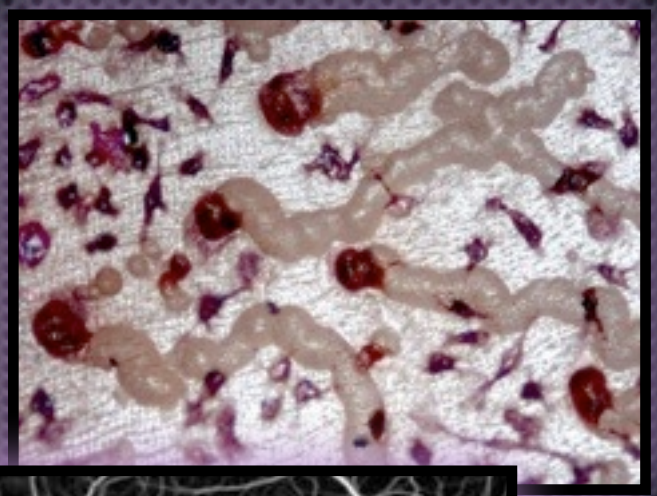
Another example of complex building blocks in the human body. The body is composed of various types of tissue, such as: Muscle, Fat, Bone and teeth, Brain and nerves, Connective tissue, etc. These tissues are made from smaller components.

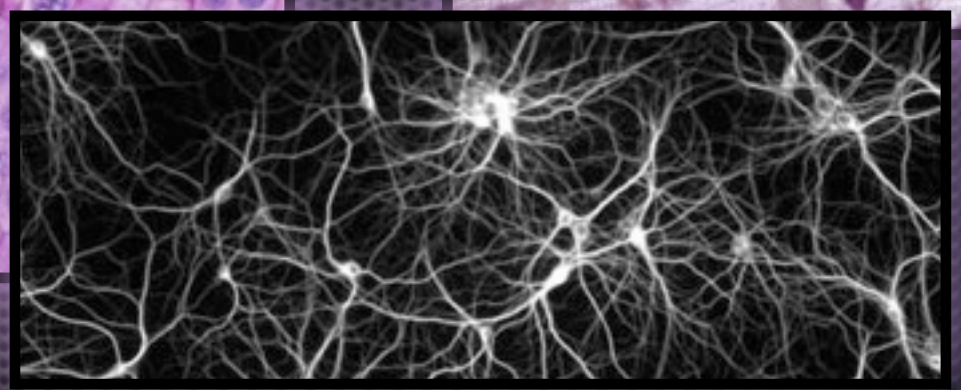
The various types of tissues that make up the body serve unique purposes and have very different characteristics. But if you look closely the tissue, you'll see it is composed of small structures called cells.



THE CELL: THE BUILDING BLOCK OF TISSUE

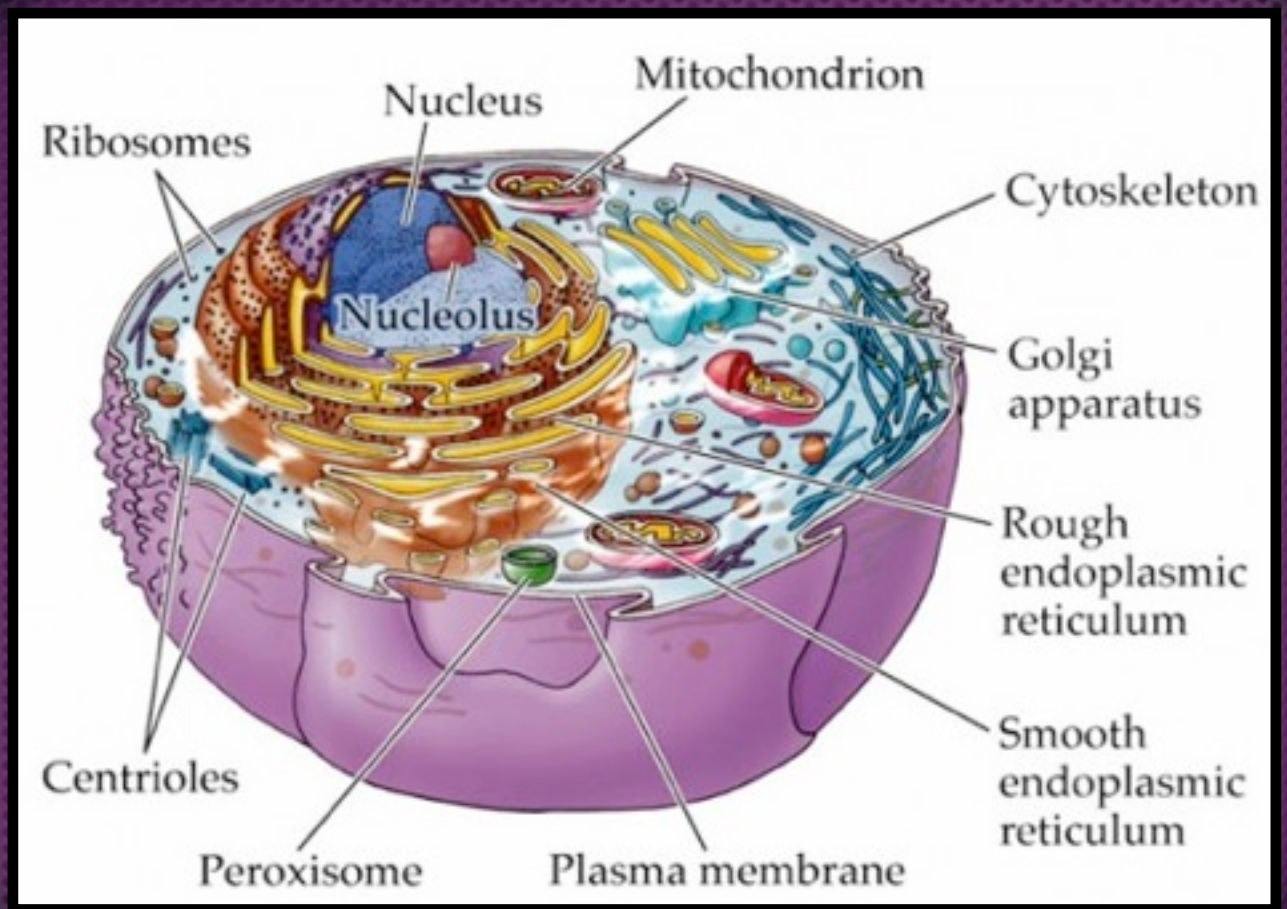






Cells are the small components that form tissue. Cells are the smallest structures and functional units in the body. Cells are uniquely made and then combined in unique ways to form the various types of tissues. If we look closer at each cell, we'll discover each cell is a very complicated structure. The cells are made from many smaller biological components.

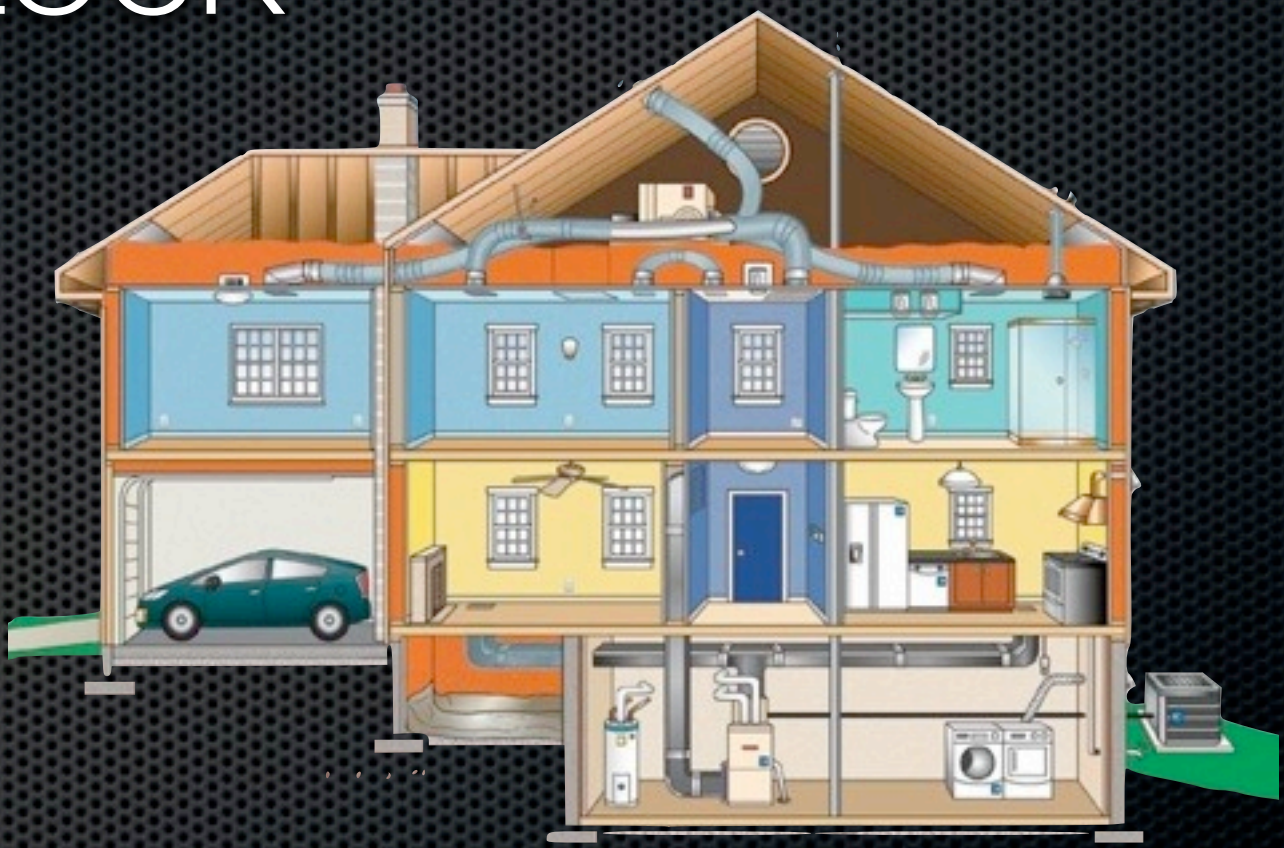
ORGANELLES: THE BUILDING BLOCKS OF CELLS



The smaller components, or building blocks of cells are called organelles. When we look closer at each organelles, we discover it is also composed of smaller building blocks. These are called proteins, fats and carbohydrates. And so on as we explore the smaller and smaller components at each level.

THE HOUSE: A COMPLEX BUILDING BLOCK

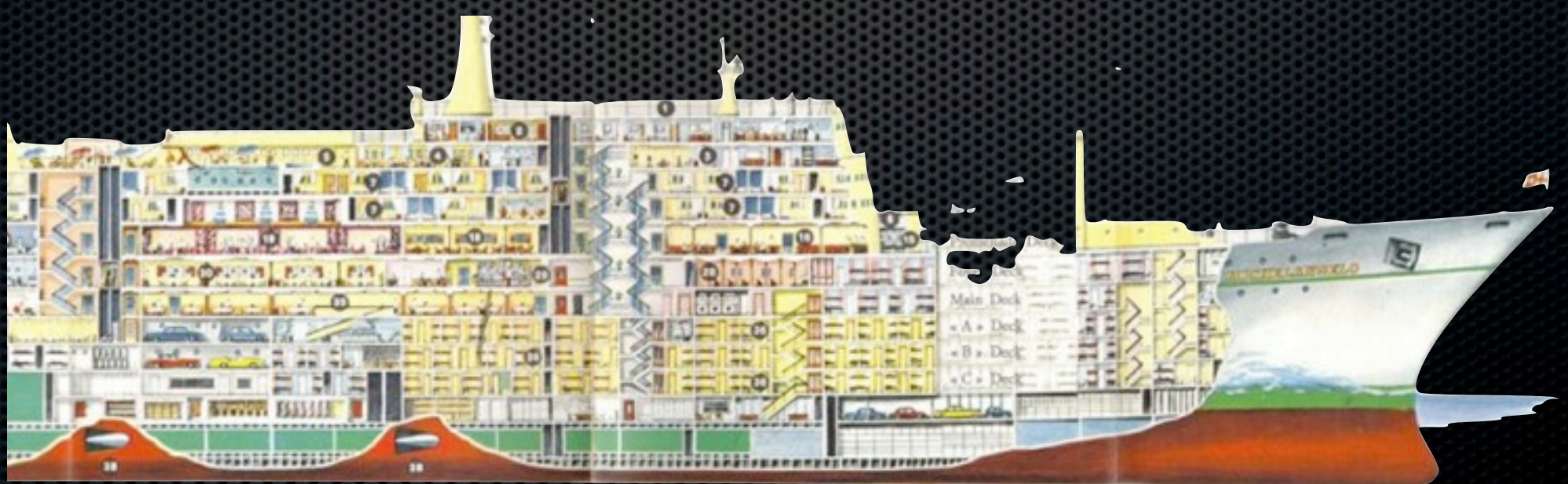
So, for the city, a basic building block would be the House. We also see that the house is composed of many smaller complex parts: Windows, Doors, HVAC Systems, Appliances, Plumbing, Electrical System, walls, roof, foundation, rooms.



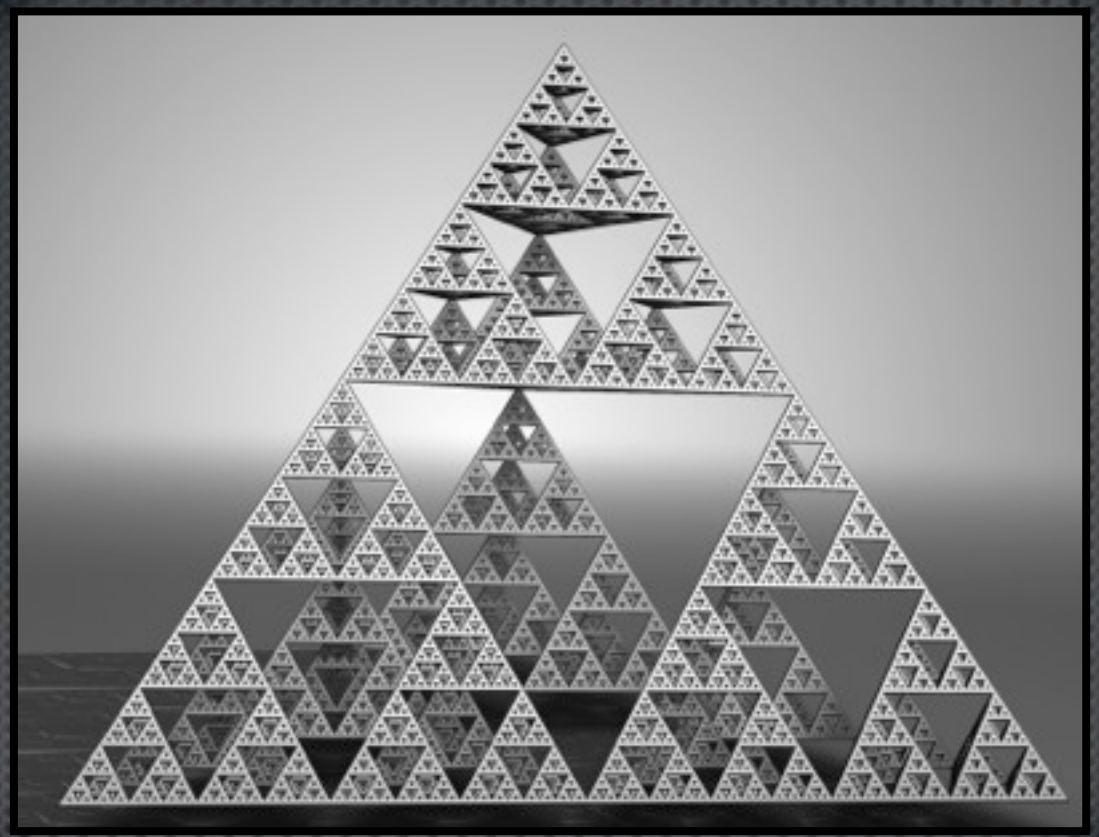
A house is composed of many interconnected parts. It is characterized by a very complicated or involved arrangement of those parts. Those parts serve many functions. A house is so complicated and intricate, it is sometimes hard to understand it.

A SHIP: A COMPLEX BUILDING BLOCK ON THE OCEAN

A ship, too, is composed of many interconnected parts. It is characterized by a very complicated arrangement of those parts. Those parts serve many functions. A ship is much more complicated and intricate than a house.



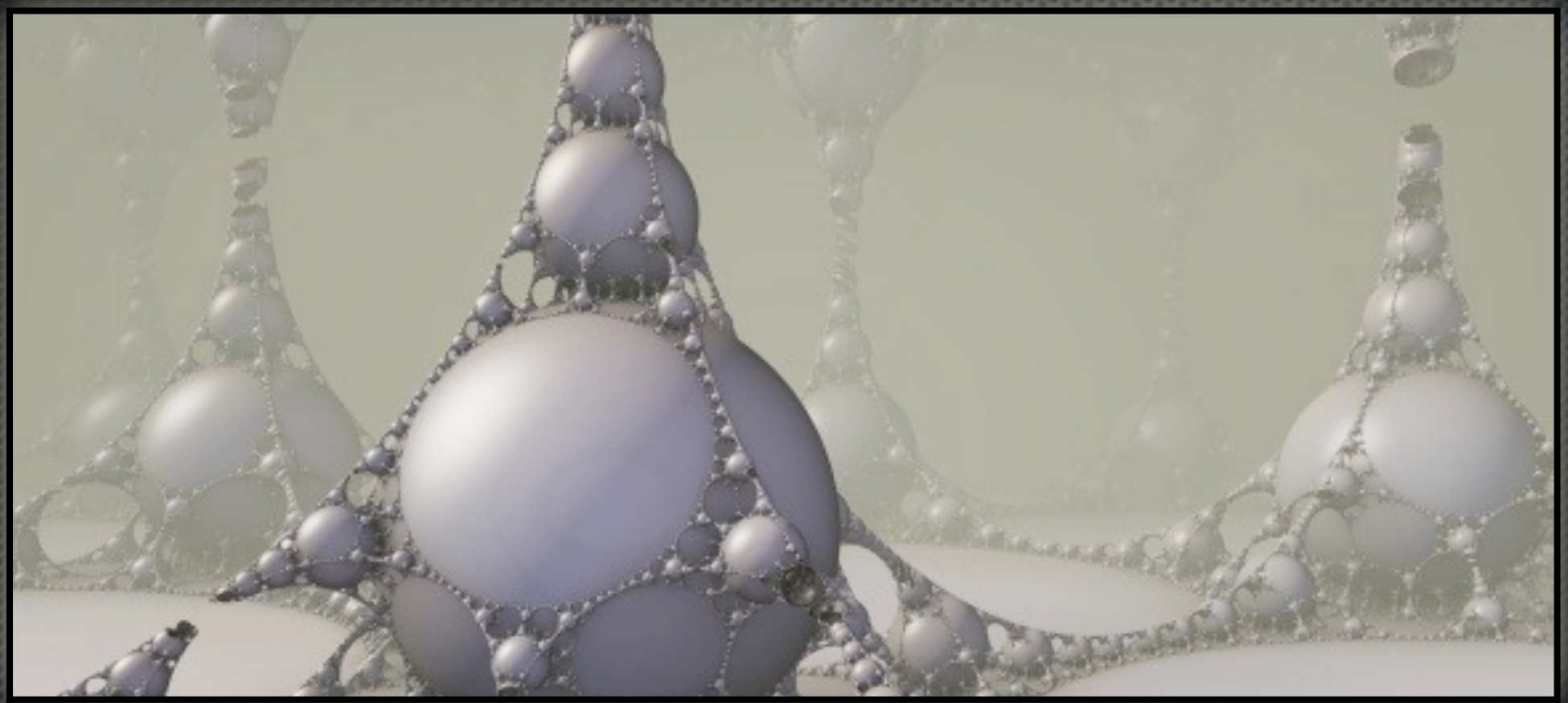
SCALE IS VERY IMPORTANT



Another important characteristic is scale. As we have seen with the body, very large building blocks can be constructed out of smaller building blocks. This pyramid is a good example. The large pyramid is made from 3 smaller pyramids. Each smaller pyramid is made from 3 smaller pyramids.

This is an example of a FRACTAL scale.

WHAT IS A FRACTAL?



A fractal is a never-ending pattern formed from a basic building block. Fractals are infinitely complex and are **self-similar across different scales**. They are created by repeating a simple process, shape, building block over and over at different scales.

COMPLEX NATURAL FRACTALS

Nature is composed entirely of fractal building blocks and patterns. Many times the fractal patterns are apparent, but often they are hard to define and are very unpredictable. The overlapping of different patterns makes the building blocks and patterns hard to discover.

FRACTAL BUILDING BLOCKS SOLVE SEASTEADS PROBLEMS.

- SIMILAR ACROSS SCALES
- MICRO-SCALAR
- BASIC UNIT(s) DEFINED & WORKABLE
- PRACTICAL AT ANY LEVEL
- MULTI-LITHIC
- EXTREMELY EFFICIENT
- INHERENT BEHAVIOR PATTERNS
- MICRO-GOVT.

CITIES ARE COMPLEXES OF FRACTAL COMPLEX BUILDING BLOCKS

The best way to understand a city is to accept the extremely complex fractal nature of the components that make up a city. We need to avoid simplifying the city. Each component needs to be studied and analyzed in its specific complex context, and a function of the various agents, objects and behaviors that affect it.

WHAT ARE THE COMPLEX BUILDING BLOCKS OF CITIES?

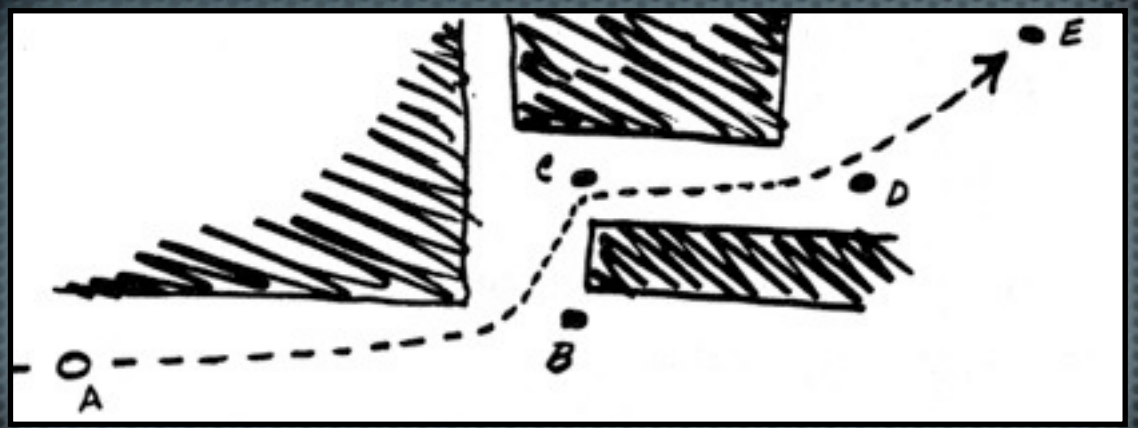
BASIC COMPLEX BUILDING BLOCKS OF CITIES ARE AGENTS AND OBJECTS

An agent is an independent actor. Agents of a city include the people, both male and female and of various stages of growth. We'll also see that groups of people can be referred to as agents. Groups such as a family, a church, a company. A group is an organizations of any type. Some animals affect cities and are also considered agents.

An object is an thing we can see or touch. We have also see that objects such as houses are complex building blocks. But other objects in cities are any structure that is built, such as commercial buildings, industrial buildings, storage facilities, churches, or arenas.

Another type of object is the built environment such as sidewalks, streets, roads or highways. Basic infrastructure would be included such as sanitary sewer, water mains, and communication infrastructure. Also, objects such as cars, planes, trucks and trains are objects.

PATTERNS OF BEHAVIORS



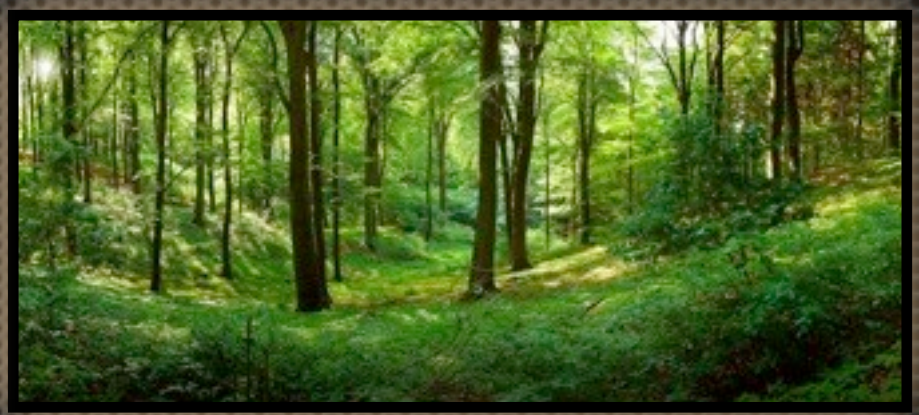
Another VERY important type of building blocks in cities are patterns of behavior. There are many patterns of behaviors in a city. The food production process has many different behaviors such as: growing or raising food, harvesting food, processing food, preparing food, and even consuming food. There are industrial behavioral patterns, such as designing, constructing, and selling a widget or a home. There are governmental patterns of behavior. They typically have jurisdictions that overlap. These would also involve street crime behaviors. There are educational behaviors, such as going to school. There are entertainment behaviors which would include sports, music, arts etc.

HUMANS AGENTS

Agents are the source for behavioral patterns. For Cities, primary agents would be the Man & Woman. This includes the various stages of growth: Infant, Child, Adolescent, Young Adult, Mature Adult, Elder.

Humans behaviors are instinctive but very adaptive. Human intelligence allows for very complex responses to the basic instinctual drives. The instincts form a pattern of complex behaviors that create city shape.

CITIES ARE UNIQUE FROM ANIMAL & PLANT STRUCTURES



The basic instincts for humans are the same for all animals and plants. But with human intelligence, there exists the ability to create much more complex structures that go beyond physical limitations. Behavioral Instincts allow humans to form the most complex social structures on Earth. We gather in families, tribes, clans, and nations. We have an incredibly sophisticated method of interacting -- speech. We can communicate over time and distance through printing and broadcasting. Our memories are the longest, our interactions the most intricate, our perception of the world simultaneously the broadest and most detailed.

BIOLOGICAL BASIS

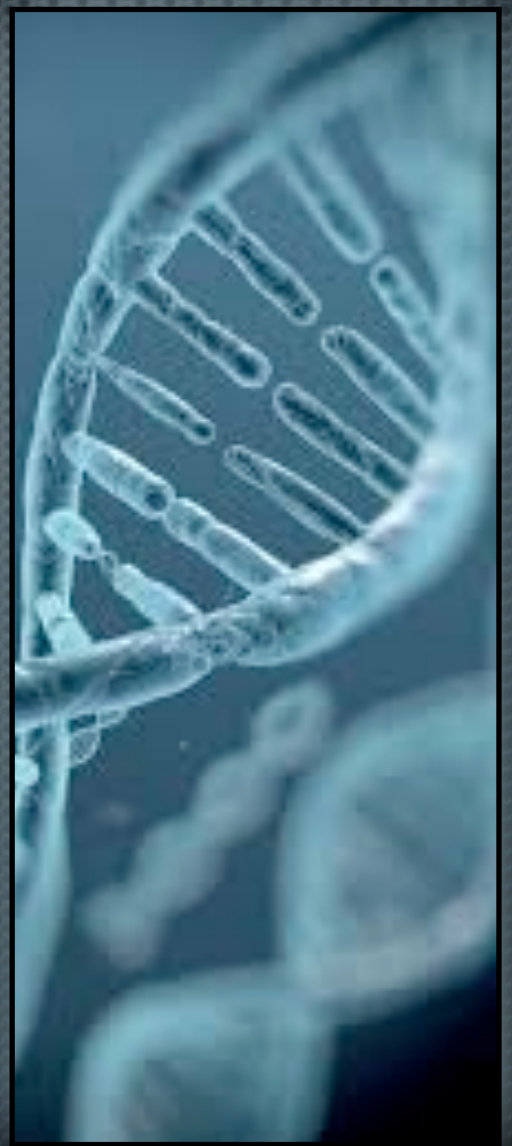
While the exact source of the biological origin of human behavior is debated, there are 2 main elements of human biology that contribute to human behavior.

1) self-preservation;

2) the reason for self-preservation, reproduction; (Family)

Self-preservation is the instinct to keep yourself alive, either physically or psychologically. It also includes extends to conditions that are life threatening mentally or economically.

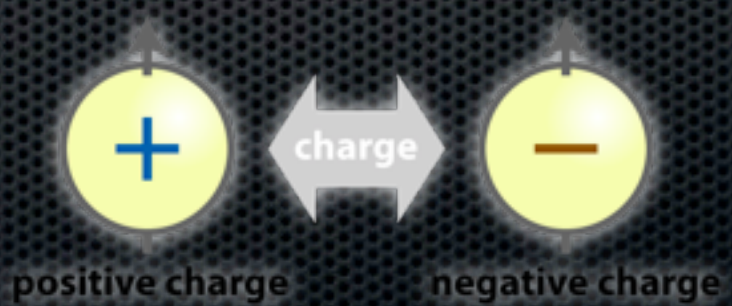
The self-preservation motivation can also be extended to others in our social circle.



POSITIVE & NEGATIVE DRIVES

It would also appear there are polar opposite internal behavioral forces that work to alternately seek out or acquire and avoid or evade those elements that might enhance or reduce our chances for survival.

SEEK	AVOIDANCE
Eating	Starvation
Water	Dehydration
Breathing	Asphyxiation
Safety	Danger
War - attacking predators	Avoiding Predators



FAMILY INSTINCT

The Reproduction instinct is the basis for the family. The family is a group of humans but also a group of complex behavioral patterns. The origin of the family is as old a human recorded history.

Genesis 2:24: Therefore a man shall leave his father and his mother and hold fast to his wife, and they shall become one flesh.

Families are rich in tradition, and formed of usually direct blood relations, but also can be formed by legal agreement. It is a Complex Building Block of Cities - and it forms the its most basic and a sustainable Unit. Broken families are less effective at self preservation. Seasteading would deter the formation of broken families.

FAMILY BEHAVIOR PATTERNS

Some of the typical complex behavioral patterns of the family are:

Producing Food and Water

Providing a safe Environment (for sleep and weather extremities.)

Reproduction

Maintenance and Cleaning

Socialization Norms

Security

Education

Religion

Leadership

Play

THE HOME - OBJECT

The home is the place where the family complex of behaviors centers. The modern home is much different than a traditional and historic home. Many of the important self sustaining behavioral pattens historically critical for survival have been removed from the home, and are now relocated to other places in within the city and are done done by non-family members. The modern home still encompasses the reproductive, security, and social functions for the family.

MODERN HOME VS FARM

The modernization process, where the ability to acquire resources for survival without the necessity to have to produce food has changed the structure and purpose of the family. It has created a conflict between the production of food and production of income. Spacial constraints made food production and income production adversarial. Land costs are the driving factor. Land values near income producing sources has driven food productions costs very high. This has forced families to abandon the production of food.

The return to the sea will immediately reverse this incentive. The cost to acquire food from far away will make food production very central to SeaSteading life.

HUMAN FARMSTEAD COMPLEX

The original model for an independent Seastead would be the Land Based Farm. While not 100% SELF-SUSTAINING, it offers many helpful patterns and scales for the Seastead. A Land based Farm has a long historical development period. Many ideas have been tried and trued. Much wisdom from a land farm can be borrowed for the SeaStead. Economical ideas can be transferred to SeaSteads to make them economically viable.

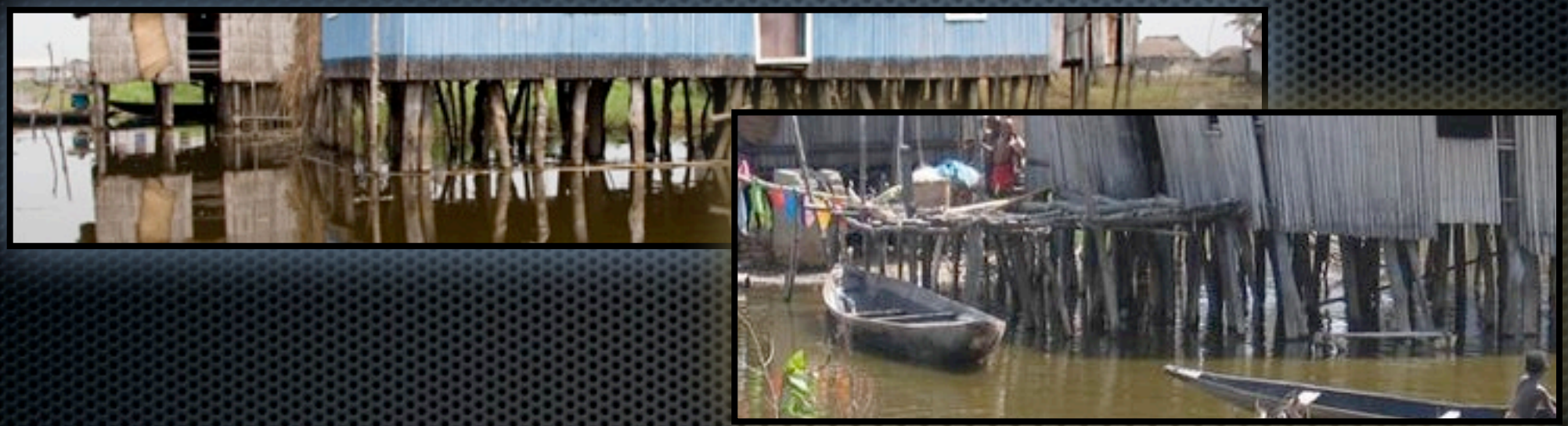
FARMSTEAD STRUCTURES

Land based Farms are an assembly of multiple structures. Depending on what is produced: grains or animals, the size and type of buildings will vary. Not only are crops stored, but so is equipment. Animals are also housed in buildings. Often, much space around the structures is used for animal storage and feeding. The residence is located near the storage and production buildings.

THE SEASTEAD

The SeaStead will again supports all complex activities important for self-preservation of self-sustaining. The SeaStead complex will look similar to modern farms, but the type of complex of buildings and support structures for SeaSteads will be greater than modern farms.

SEASTEAD COMPONENTS



The main components of SeaSteads will be the following:

1. Residential Building
2. Modular Components
3. Food Production Component
4. The Network Interface (Boat Interface)
5. Exterior Activity Areas/Exterior Networks
6. Mooring System: Mechanical Connections to components of Seastead
7. Climate Protection System/Wave Protection System
8. Energy Production/Water Production/Sewage Treatment
9. Security Systems/Medical Support

RESIDENCE FORM & FUNCTION

Instinctual behavior patterns establish the basic shape of the home. Each room of a house is itself a complex interaction of space and instinctual behavioral pattern. The modern kitchen performs the food storage, preparation and consumption functions. The bathroom stages the performances of defecation and cleanliness. The bedroom is for reproduction, sleeping and dressing. The living room for socialization, rest, education and many others.

THE BOAT RESIDENCE

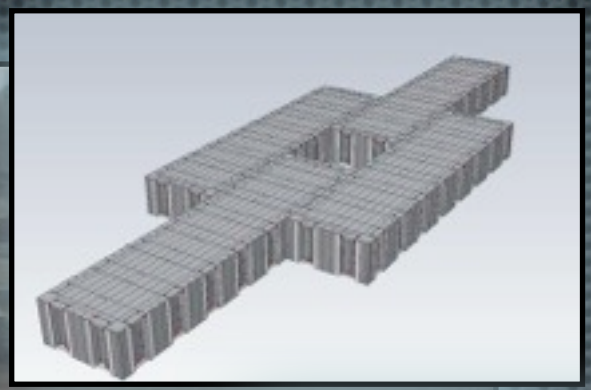
The most unique aspect of Seasteading is the entire complex must FLOAT on the ocean!! The challenges of this technologically are enormous. At the same time, many of the basic components will be based on boat technology that is both proven and novel.

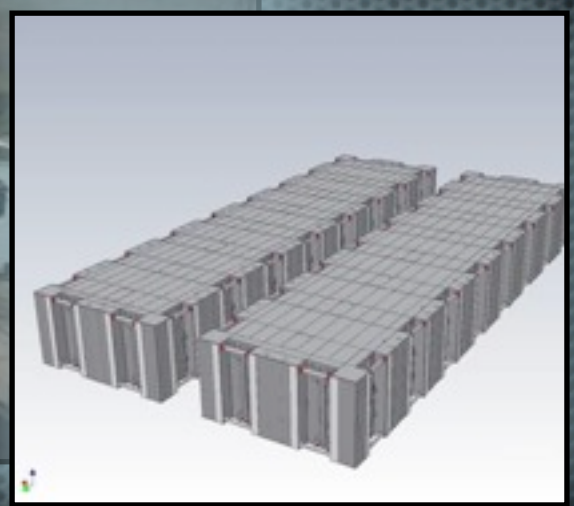
Micro-scaled Modular Seastead.

The novel component that must yet be created for a Seastead succeed is micro-modules. The scale of the modules should be small enough to be very affordable. Work should be directed toward creating a micro-module that could be assembled to create a Sea-house or other small structure. These modules could be constructed of smaller components that would allow a variation of above water structures.

I'm not an expert on Ocean design limitations, but small boats survive on oceans as readily as large craft. I would suggest putting all energy into creating these modular sea barges to be as cheap as possible.

MICRO MODULAR COMPONENTS





Micro-scale modular components would allow great flexibility in SeaStead growth. The micro-modules could be added slowly over time as resources would allow. Gradual accumulation of micro-modules would allow transitional SeaSteads to those transitioning from land to sea. To see a mature Seastead complex, we have an example called Freedom Cove, from British Columbia.

Freedom Cove is a complex of sea based buildings constructed by the family home of Wayne Adams and Katherine King. It is a self-sufficient food garden complex located in a protected nook on the western fringe of Vancouver Island, Canada. This complex has been assembled over several years. This complex of floating modules has a residence, several Greenhouses, outdoor planting areas, workshop and water tower.

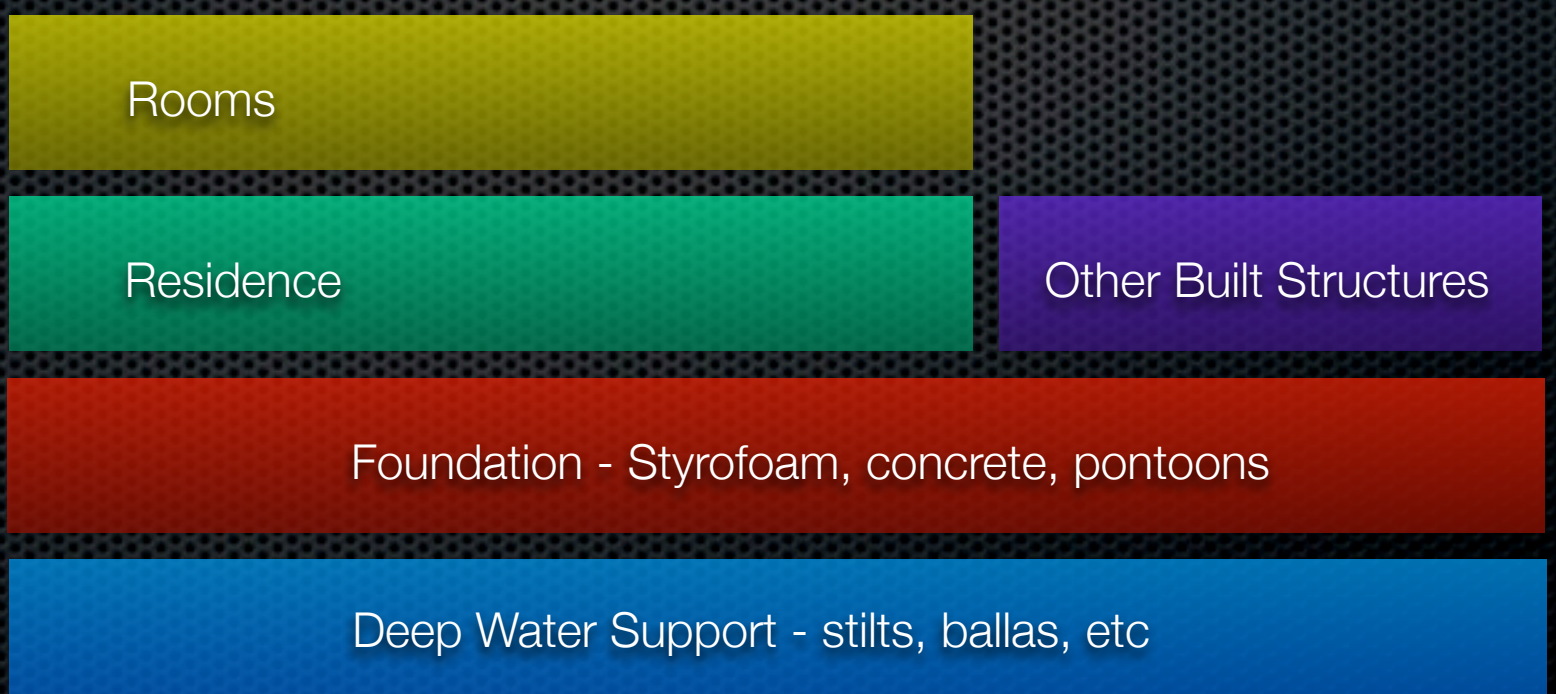
START SMALL

As a new Seasteading family begins the process of Seasteading, they will most likely start very small. If the smaller the components can be scaled up, the more likely a start up will succeed.

Gradually and incrementally, new structures will be added as needed or as afforded. New machines, specialized boat craft, quality of life enhancements will require new structures.

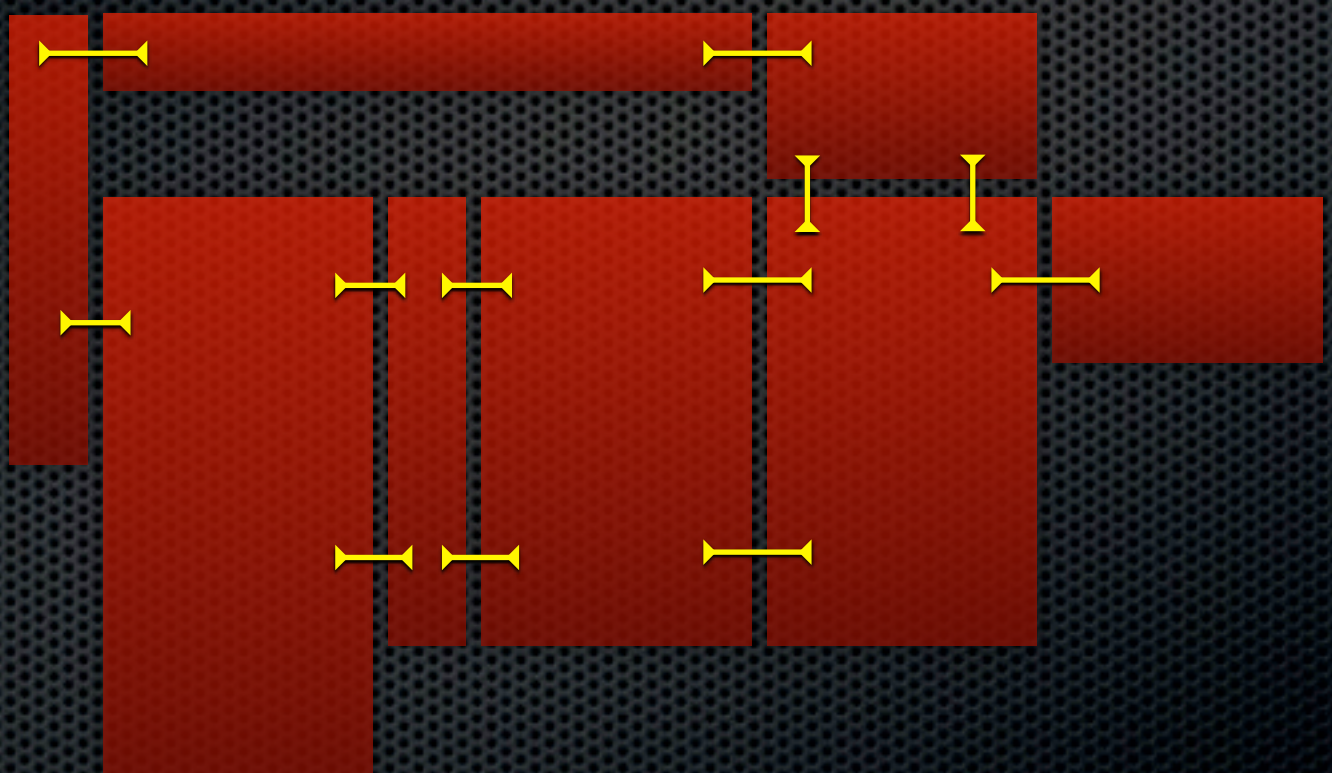
ISOLATED LAYERS

Another important concept is isolated layering. Rather than creating a monolithic floating structure, all SeaStead components should be created as isolated independent layers. There are several important layers necessary for a SeaStead. The lowest layer is for deep water support, the next layer is a floating foundation, and the final layer would be the building. The layers should be upgradable and interconnectable. The residential layer could be moved to a new foundation if the old one is no longer viable or if a new opportunity should arise. Deep water supports can be added or removed without affecting the foundation.



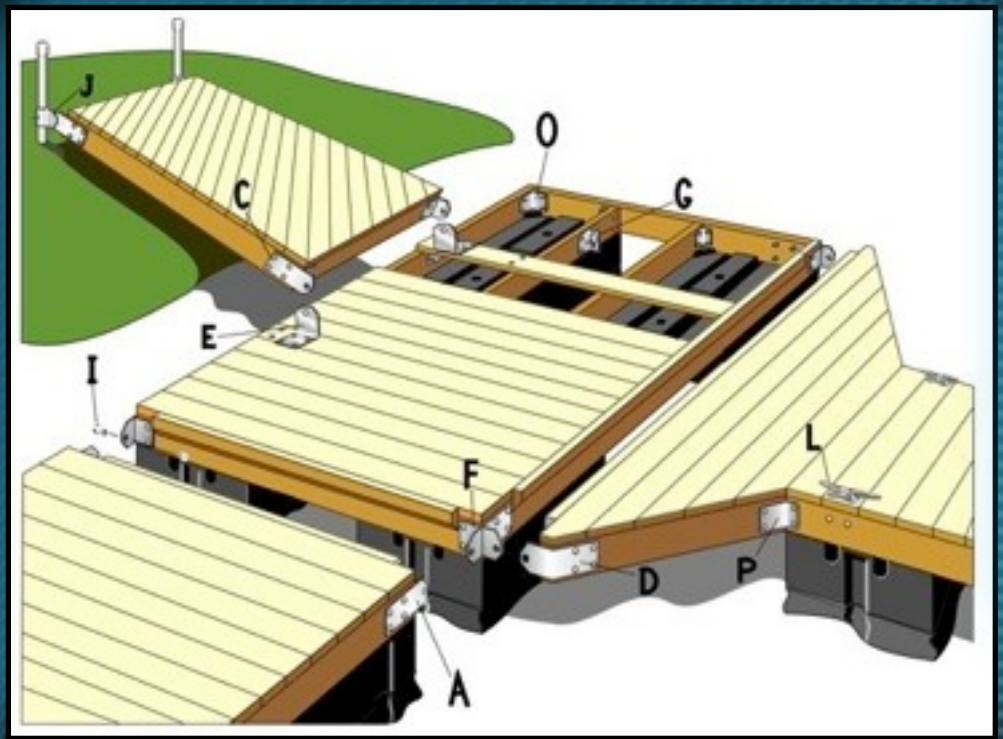
CONNECTIONS

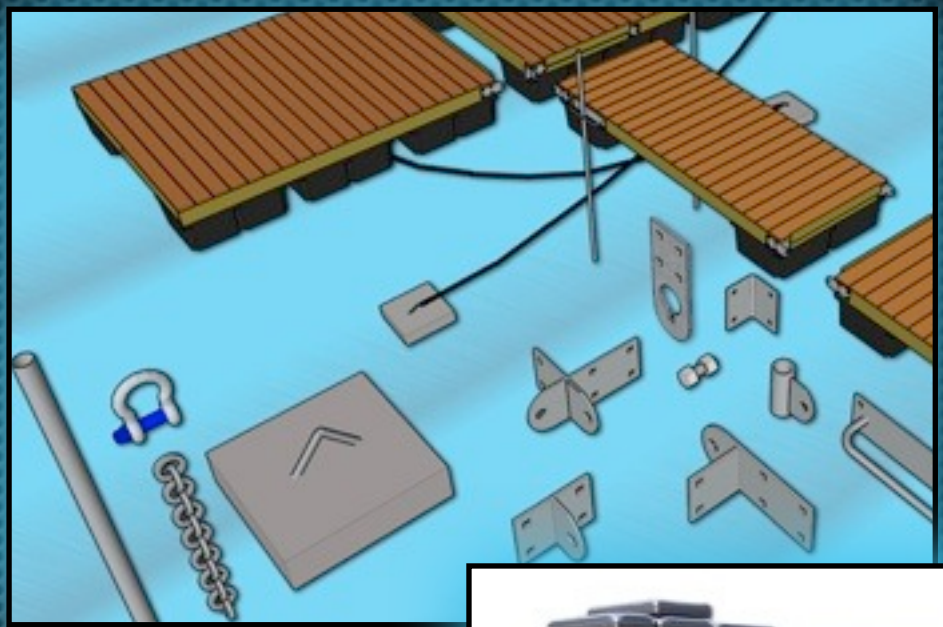
The modules should also have the ability to connect and disconnect from each other. The connections should be robust and be able to withstand the mechanics of life on the water. The connections could be extremely rigid, allowing no independent movement, or very dynamic, allowing extreme movement.



Foundation Modules: Plan View - components connect to form super component.

LEGO-LIKE SUBCOMPONENTS





The idea would be to allow off the shelf assembly of many structures from a wide but limited set of components. The components would have a certain amount of standardization to make them interchangeable. The idea would be allow a transition from land to seashore, then to shallow water, then to deeper water and then finally to the deep seas.

EASY TO CONSTRUCT

The less individuals need to create from scratch components like the foundation, the more likely innovation and improvisation will occur. The Seastead could be a kit that is tinkered with by thousands of innovators. The Seastead Institute should facilitate the exchange of these ideas. It could be treated like an open source project where innovative ideas are freely redistributed. The free market can fill in the voids in the various implementations of the kit.

NETWORK INTERFACES

The Exterior Network Interface is a boat mooring area. There are many factors that control the spacing and location. The first is the vertical distance to the water surface. The second would be the type and size of water craft.

DISTANCE TO WATER

The Vertical distance to the water will have a profound effect on the shape and the functional relationship of the SeaStead to the water. The closer the relationship, the stronger and more expressive the connections to the water will be. This relationship will affect the many complex behavioral patterns of the Seastead.

LAYOUT OF BUILDING BLOCKS

The Seastead Building Blocks should be designed to allow for a variety of arrangements. But, each function will need space to operate. These 'blocks' must connect/interact in a fluid but permanent way. The Seastead is not static, but should be highly dynamic and interchangeable.

SEASTEAD BUILDING BLOCKS

This list below contains important building blocks for the Seastead.

- The Residence
- Seafood Production & Storage
- Energy Production & Storage
- Water Production & Storage
- Sewage Treatment & Storage
- Greenhouse Production & Storage
- Support Buildings:
- Equipment Repair & Storage
- Animal Production & Storage
- Commercial Areas
- Social Areas
- Security Systems

FOOD PRODUCTION

The Seasteads‘ primary function is the production of food from the seas. This will include gathering, raising, processing, storing, and even preparing, packaging and selling seafood. Special attention needs to be given to the components of food production. They should be inexpensive and highly scalable.

SEAFOOD PATTERN

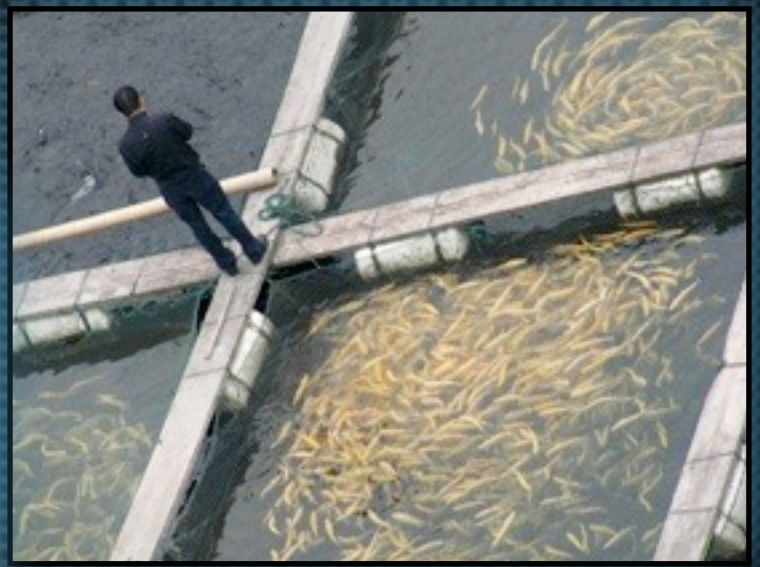


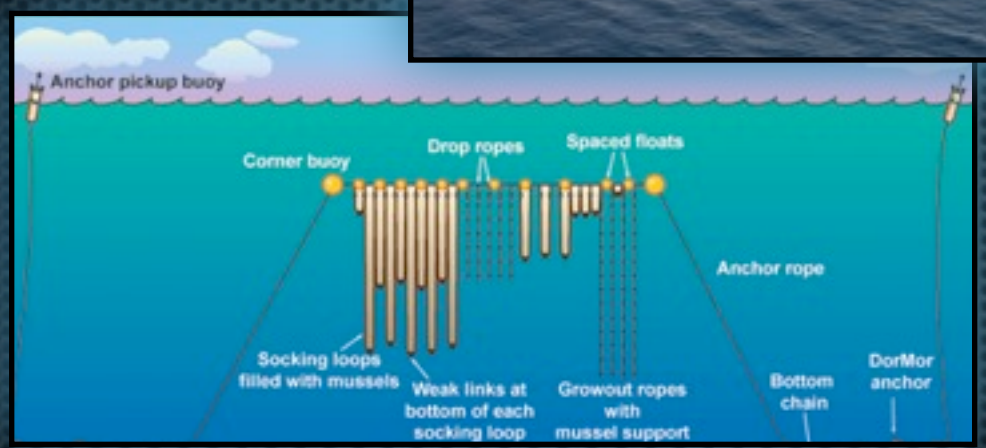




The Seafood production pattern includes gather the seafood, cleaning it, preparing it for consumption or sale, cooking it, serving and eating. Modern land life has fractured the historical traditions of food preparation, but necessity of life on the Seastead will restore this important complex behavioral pattern.

SEAFOOD PRODUCTION





Sea Farming will likely be preferred to sea fishing. The static nature of sea farms, and the limited resources should encourage many innovations.

SEA FARMING

Aqua farming will need to evolve to allow families to raise fish for themselves. It may also provide a means of producing money.

The pattern of farming will determine the shape & size of the typical seastead.

As production increases, so too will the need for additional structures. The ability to be self-sustaining for food will automatically scale up dramatically to allow for production of food for other people. The basics of food production are highly scalable.

SEAFOOD STORAGE

One big challenge is the storage of seafood. Seafood should only be stored 1-2 days at room temperatures, so it will need to be cold stored or sold quickly. If the Seafood is frozen, it will likely be very energy intensive. Other options of storing seafood would be to dry it or ferment it.

Another option is to raise the Seafood to maturing and then keep it alive - and fresh until it is sold to and transported to the shore or other Seasteads.

Seafood will generate waste from guts, boney matter, and scales. All these components provide and opportunity to be recycled for garden or chickens.

OTHER FOOD COMPONENTS

There will also be a big demand for non-Seafood sources of food. Many unique floating structures should evolve to fill that demand.

There also may need to be food processing facilities structures. The space needed may not be as critical as the mass of waster generated and the associated smells. The waste material could be extremely valuable in other food production loops.

OTHER FOOD SOURCES

Chickens

Pigs

Green houses on Roofs

Small Gardens

Small Fruit Trees

Sea Cows or Large semi-domesticated sea mammals

Other Animals: Goats ?

Bugs

FLOATING CHICKEN COOP

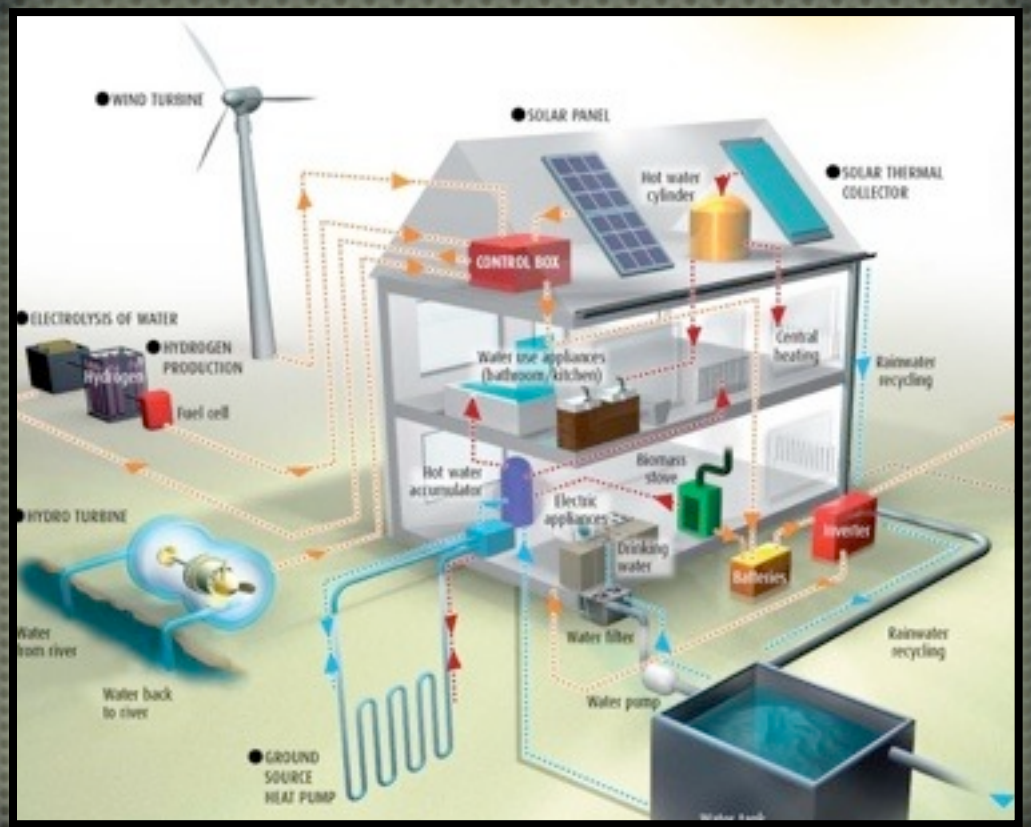
Chickens make a natural choice for a non-Seafood source of food. Chickens can eat practically anything - being omnivores. Chickens are also very compact they require as little as 2 square feet of space per bird. They also provide one of the best sources of fertilizer. They can not only grow very quickly (2 months for a broiler) but also provide an ongoing nutrient source of food via the egg. Chickens also can 'recycle' many waster products.

FLOATING GREEN HOUSES

For long term SeaSteading, some land based plants will need to be grown locally. Green houses and other planting areas can provide food sources. SeaSteaders also need a source of organic matter such as dirt or compost, as well as fertilizers and water. Protection from climate extremes might also be necessary. These structures are not intended to replace land based farms, but to provide fresh non seafood on the SeaStead, much like a garden for a city dweller.

SEASTEAD ENERGY

The need for energy production and storage on site will be extremely great. The solving of this problem in a economical way will control the whole success of the SeaStead. Three great sources of energy are solar, wind and geo-thermal. Batteries are evolving quickly and should be more economical too.

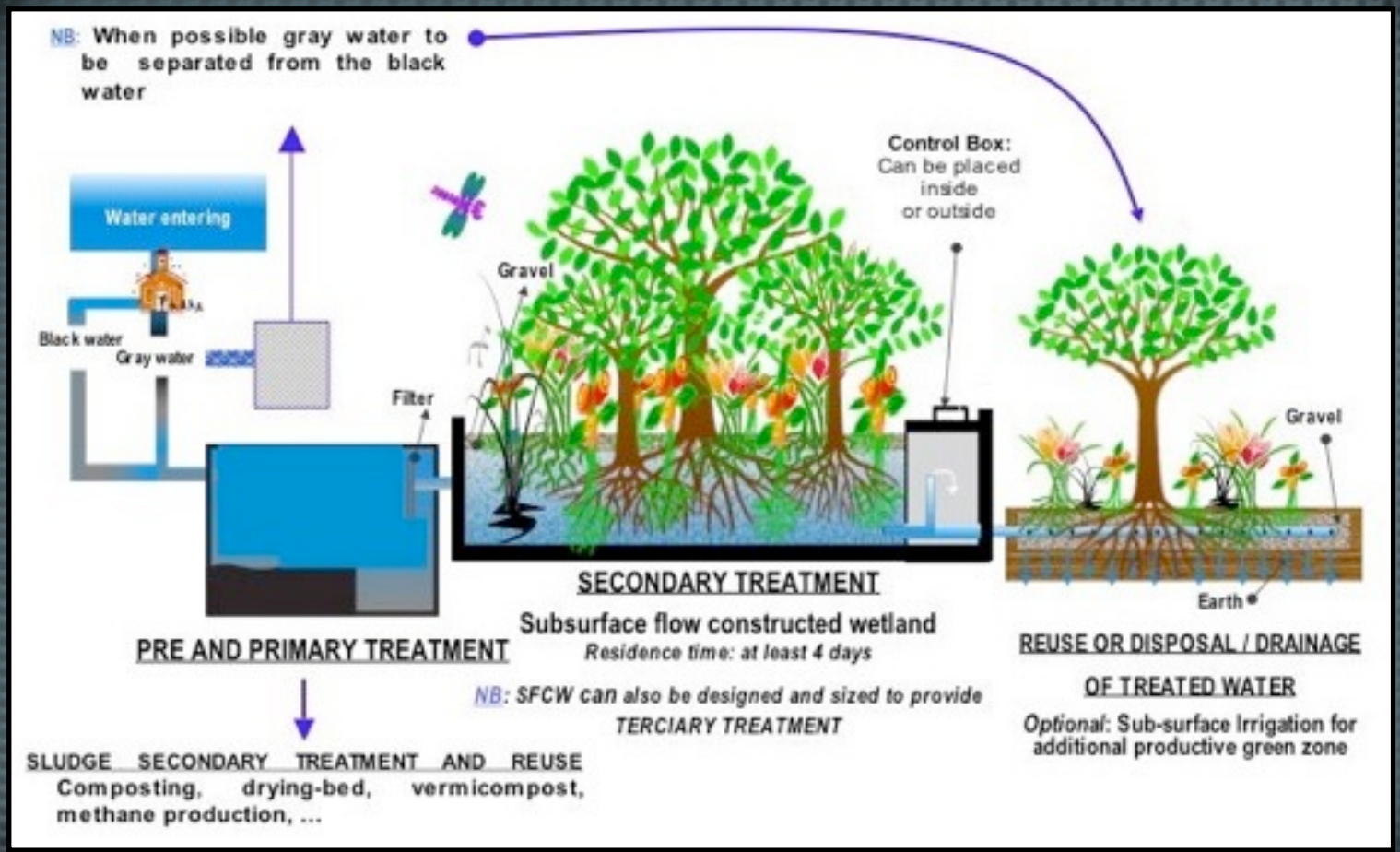


Power boats may be operated by wind. Wind is extremely plentiful on the ocean, and virtually free. The history of wind powered sea vessels is as old as sea travel itself. Perhaps solar energy and battery sources will evolve enough to provide another reliable source of boat power.

SEASTEAD WATER

Water is a crucial resource for SeaStead survival. The primary water source is the Ocean but the challenge is finding an efficient way to desalinate it. Storage of drinking water will also take space on the SeaStead, as well as pressurizing it. Water will be needed for raising animals and growing food.

SEASTEAD SEWAGE



Unlike on land, Sewage on the SeaStead will be a valuable resource. It is a source of concentrated nutrients for plants. Treated and sewage should be composted to form basic soil on Seasteads.

SEASTEAD STORAGE

Food will need to be stored without consuming a lot of energy. SeaSteads will need very efficient freezers. Stocking up perishable and non perishable food from land sources might require a lot of space. It is foreseeable that nearly a year supplies might be required. Where will the money come to buy those supplies. Food processing equipment will be needed for SeaStead food production. This equipment will need long term storage space as well.

MEDICAL ISSUES

Medical issues will also need to be carefully planned and resolved. Medical emergencies will not be practical to rush to medical professionals or centers. Perhaps internet based help (both face to face and resources) will provide many solutions. But what of severe injures that require surgery? How does a seasteader get to a hospital in time? Emergency boats might be deployed.

SECURITY

Security at the High Seas is provided by each Seastead. Weapon proliferation will help deter some attacks. Training for SeaSteaders in self defense will be necessary. Boat based interceptor technology will also be critical, as well as some type of sonar/radar. Storage of valuable items - protected from pirates as well as loss from 'sinking' will be necessary. GPS will also prevent may mishaps.

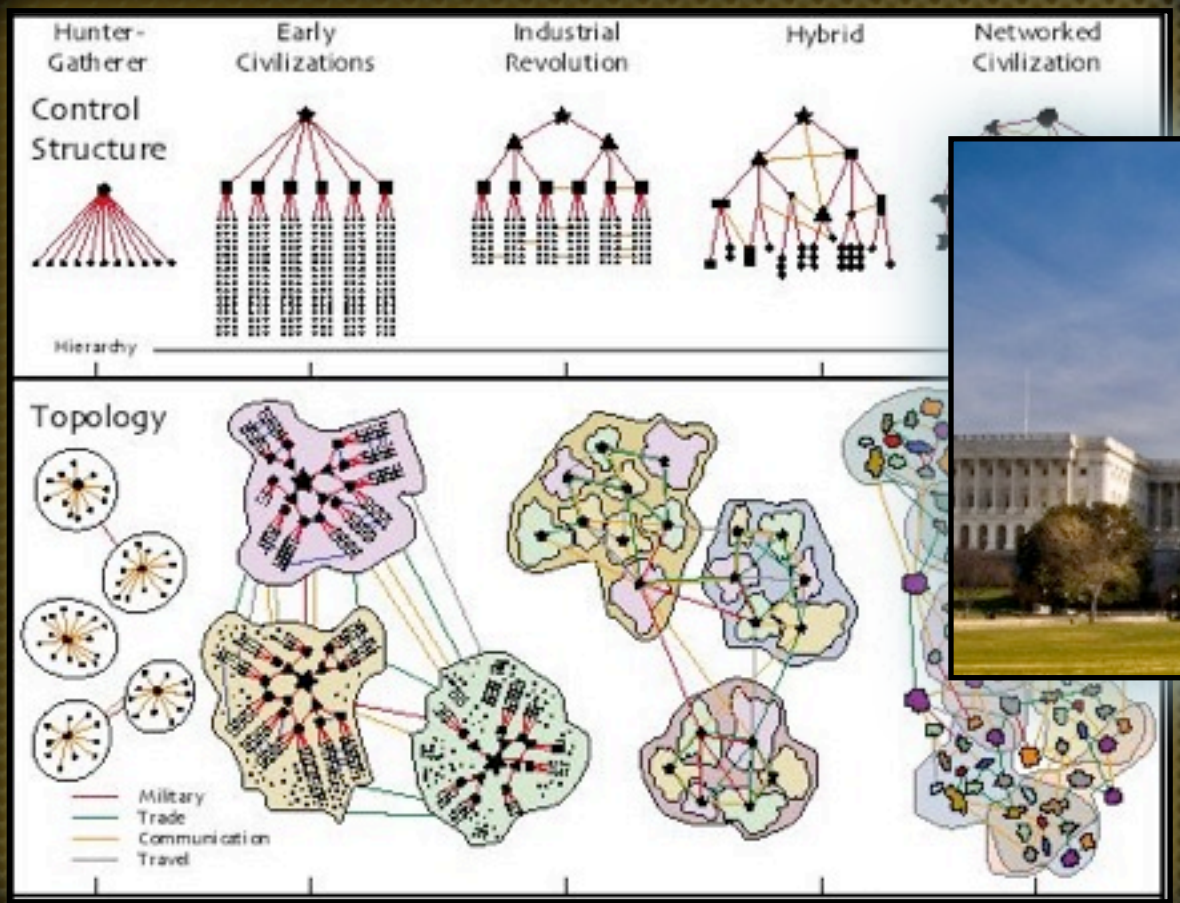
EXTERIOR SPACES

Exterior spaces will be necessary for recreational, agricultural, social, economic, mercantile, production, relaxation and many other purposes. In nearly all cases of Water Based existing cities, they were very small areas, and used for interfacing with boats. Only in rare cases were large open spaces created - Freedom Cove had the most, and a village in Thailand had soccer field.

INTERNAL NETWORK

The internal circulation network will connect the various SeaStead components together. These network links have a very high economic cost, related to their return economically. They will also have a high degree of mechanical functionality and complexity. They will have to act as structural connections and stabilizers between the components.

GOVERNMENT

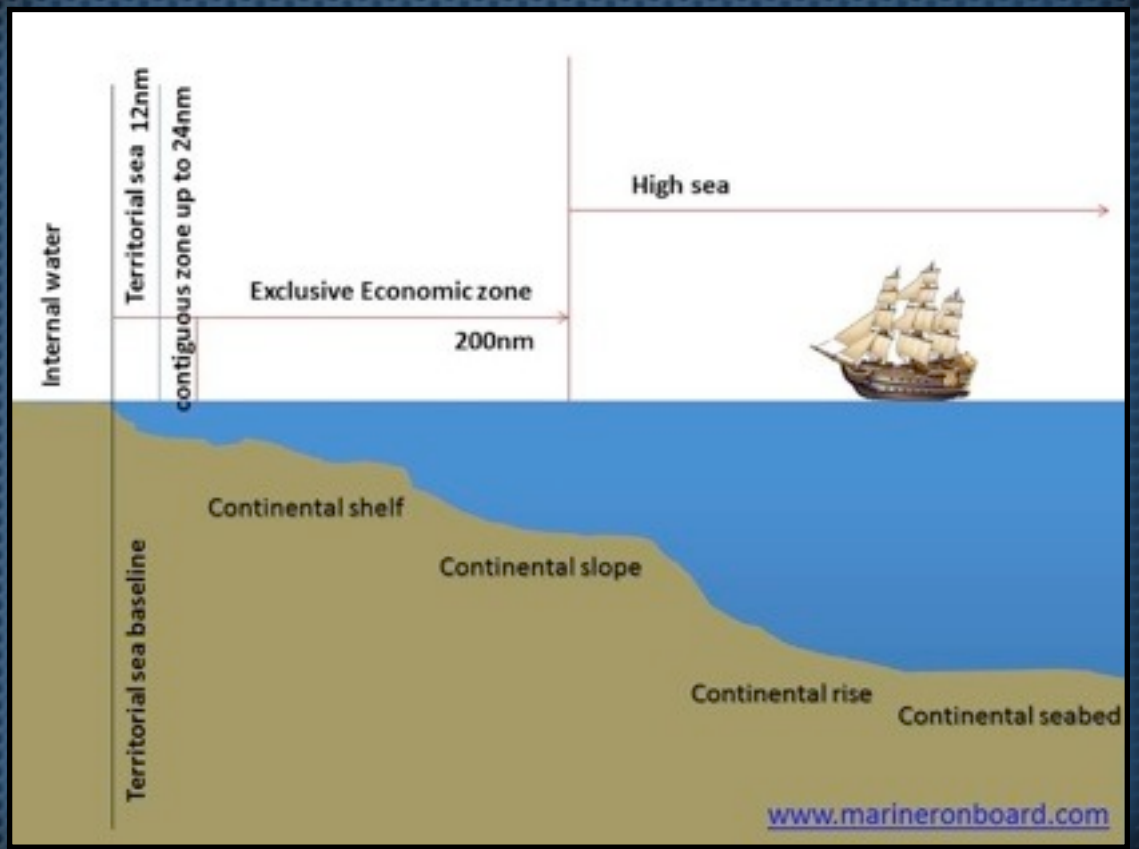


Initially the goal of many SeaSteaders is to move to less repression government. The nature of living at Sea will indeed achieve this goal. The actual result will be far beyond that. In nearly all cases, Seasteads will have no external form of government at all.

IF YOU REMOVE GOVERNANCE: THE RISE OF TRIBALISM

When SeaSteaders leave the jurisdiction of land governments, they will return to an instinctually based form of government: THE FAMILY

The lack of higher more forceful types of government will invigorate a form of law based on FAMILY structures. In some ways it will be a feudal or tribal type of society.



Most impressions of Tribal law systems are negative. This may come from the oppressive monarchy system they can evolve into. But at the family level, tribal systems are very effective at protecting, leading and controlling the family.

WHEN REBELLION MEANS SAILING AWAY

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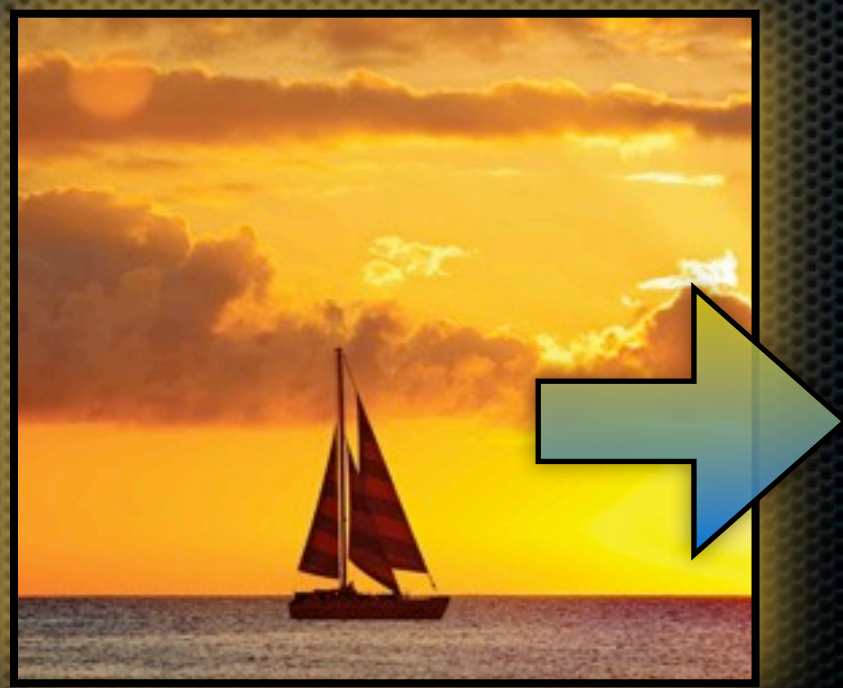


In order to have an advanced form of government, it would be necessary to have many individuals demanding equal say in the leadership decisions without a way to escape the oppression regime. But the ease at which a rebellion will be able to achieve independence at Sea will change the dynamic of political evolution. Democracy, as we understand will essentially disappear on the ocean.

THE PATRIARCH/MONARCH

The instinctual governmental structure of a family is a monarchy, with a strong tendency to be patriarchal. Many women who have large families prefer the leadership of men, in terms of protection, decision making, behavioral control of children, providing food and other items, and in the division of labor.

TRADITIONAL FAMILIES

THE TRIBE AS NEW GOVT.

So the return to the instinctual family government system will give rise to tribe systems of government as families grow in size and several generations of children stay moored close to the families of origin. The descent from a common ancestor will shape the evolution of the SeaStead as it grows into a SeaStead Village.

THE TRIBE

From Wikipedia; A tribe is a distinct people, dependent on their land (Sea) for their livelihood, who are largely self-sufficient, and not integrated into the national society.

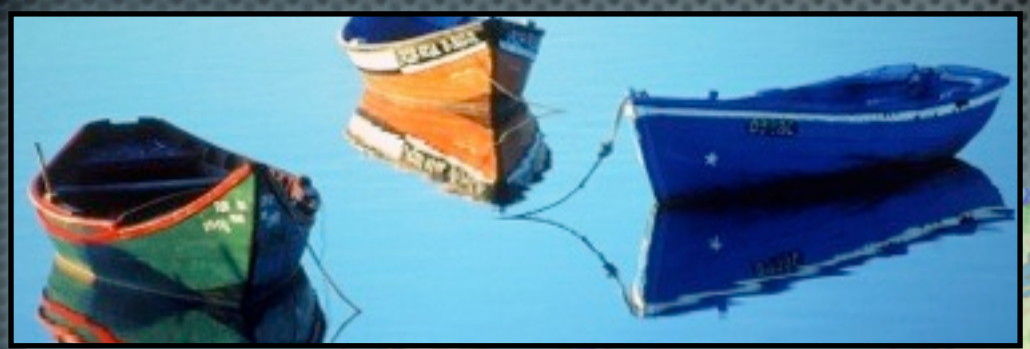
Stephen Corry, director of Survival International, has defined tribal people as "those which have followed ways of life for many generations that are largely self-sufficient, and are clearly different from the mainstream and dominant society".

Many people used the term "tribal society" to refer to societies organized largely on the basis of social, especially familial, descent groups. A customary tribe is a face-to-face community, relatively bound by kinship relations, reciprocal exchange, and strong ties to place.

Some use the terms "ethnic group", or nation instead.

JURISDICTION STOPS AT THE END OF THE MOOR...

While I'm not a legal expert, it is my understanding on the high seas that once two boats are permanently moored together, they share a common form of government. The Captain is the supreme leader, and all others are subordinate. Once the moor is broken, then the subordination comes to a end.



GOVERNMENT & TRENDS

Many types of government will emerge as hybrids of the family and tribal structure.

Single parent families with young children will nearly disappear as as the governmental dependency creating structures that support them are either non existent or tightly controlled by the patriarch or tribe.

Self Sufficiency will reduce the need for cooperation at many levels. New hierarchies of cooperation will emerge.

Segregation as a massive scale will emerge.

Family dynasties will also emerge.

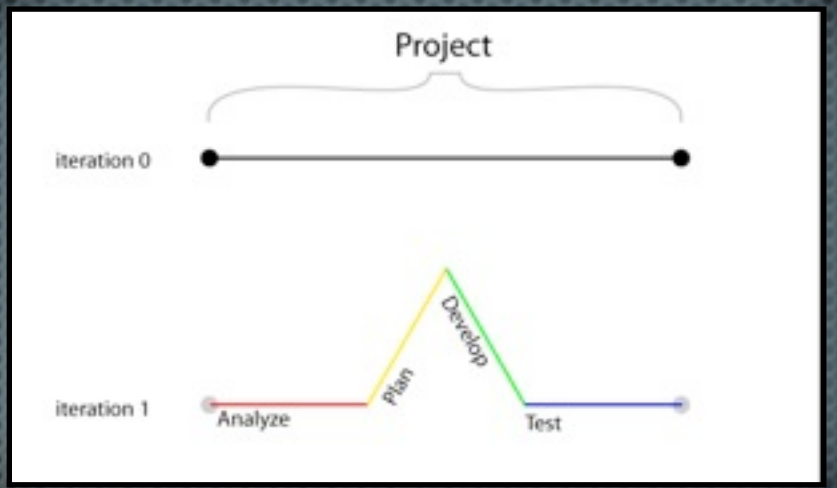
ETHNICITY

Many new ethnic forms will emerge. These will give rise to new languages, customs, and traditions. Seasteads living in relative isolation will have many unique habits arising from inherited learned behaviors. The great decline in the unique ethnic populations of the world will reverse.

FRACTAL SCALE 2
COMPLEX OF SEASTEADS

The second scale of a fractal is made up of the union of several smaller “copies” of itself, each copy being transformed by a very complex process. In order to comprehend the complex fractal process, first search for the simple process underneath. Almost all fractals are at least partially self-similar. This means that a part of the fractal is identical to the entire fractal itself except larger. Fractals can look very complicated. Yet, usually they are very simple processes that produce complicated results.

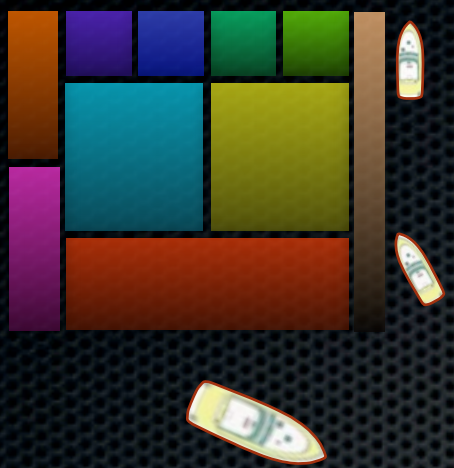
FRACTAL SCALE 2



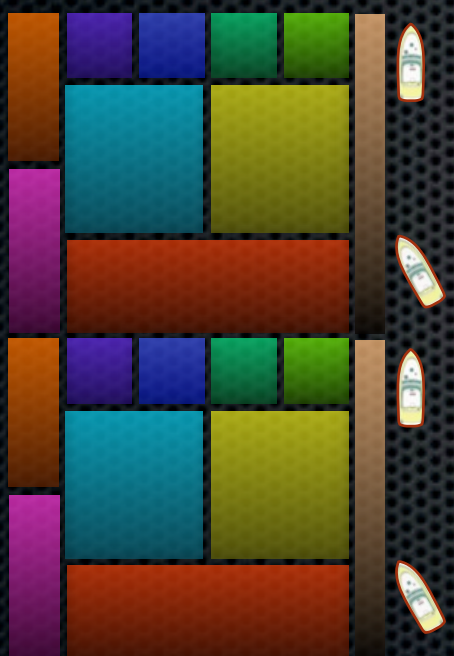
The concept of Fractal Scale is extremely complex, but simplifying greatly, the 2nd iteration of the Seastead Complex would be simply 2 or more families. We have begun to define the basic building blocks of the seastead. These are now repeatedly at a slightly more complex scale. The geometry of those structures will take more robust but similar solutions.

Also, there are significant structures that emerge at this stage that were not as well defined at stage 1. First the external network and second is the external government.

MULTI FAMILY CLUSTERS



During the second iteration of the fractal SeaStead multiple family SeaStead Complexes will be grouped together based on family relations. Other basis for grouping may be economic or survival motivations. The new structure is called a SeaStead Village. The SeaStead Village will be a unique structure that has similar characteristics to SeaSteads, but it will also have new structures that emerge to fill new functional needs.



The External Network is a new structure at the village level, and will have Pedestrian Connection (SeaWalks) and boat oriented Water Ways. The dynamic nature of the SeaStead basic building block will give new properties to these structures that are different than their land counterparts.

Additional nuances are now more critical such as Spacing Challenges (via a Bracing Structure, a Moor or Stilts). The segregation or conglomeration of uses will evolve as well. And finally, the governmental structures will become Elder-Tribes oriented.

THE SEASTEAD VILLAGE

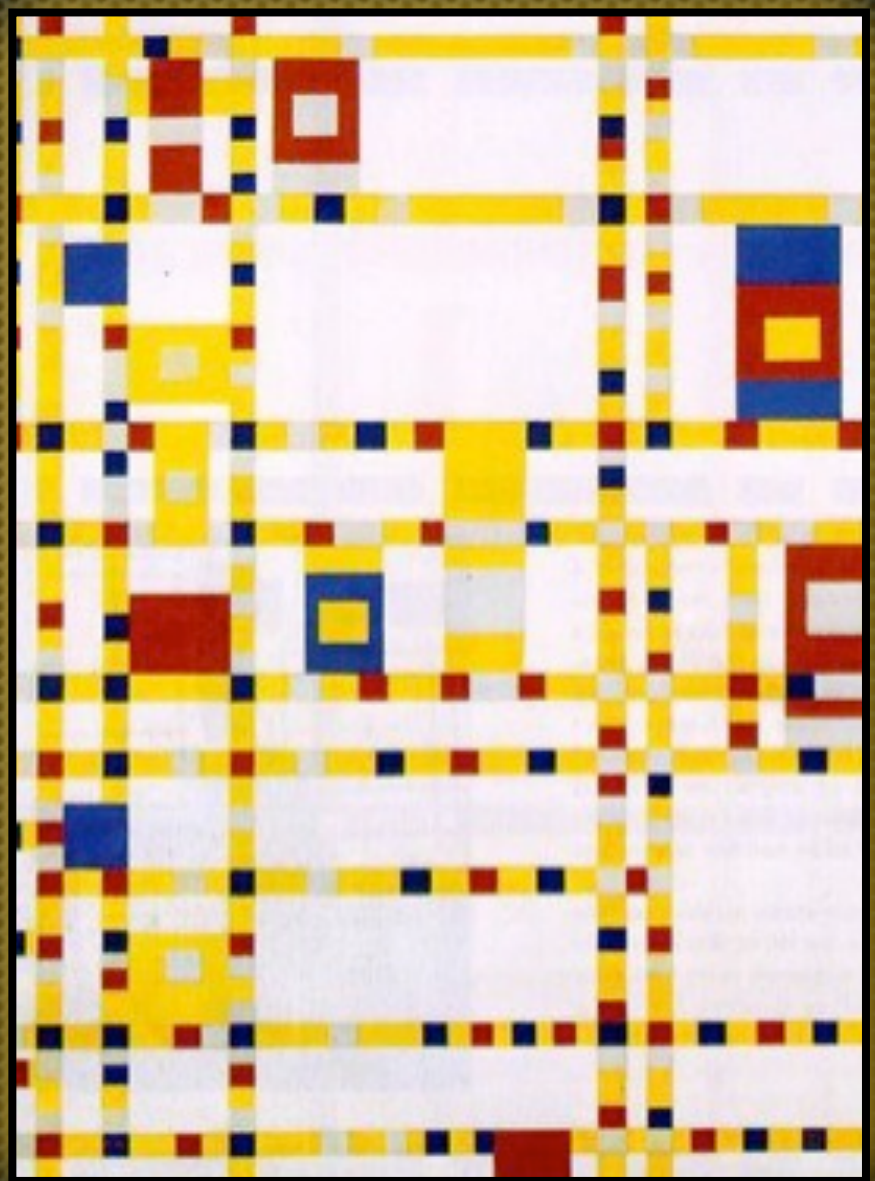
The land counter part of the SeaStead Village is the traditional villages of primitive hunter gatherers and primitive farming villages. These were primarily clusters of Families, kin, and clans and some non-related dependents. SeaStead Villages will likely have either a interior open space for boat mooring, or form solid mass with no interior open space. The response of the SeaStead Village to waves and threats will drive the overall shape.

SEASTEADING VILLAGE ZONING

Unlike the flawed model of modern zoning, where cities are artificially forced into large mono-lithic use zones R (residential), C (commercial). I (industrial), P (public) and G (green spaces), the SeaStead village will again revert to a biologically driven instinctual pattern of spacial uses based on family instinctual Use Pattern areas. Modern zoning's many legal flaws will disintegrate on the wide open ocean.

ZONINGS ARTIFICIAL ORIGINS

Modern zoning is not a natural occurrence. It arose out of a legal precedent that gave the City Governors power over the uses or functions with in the city. It arose out of a Supreme Court ruling, arbitrarily deciding the City has the power to restrict certain activities in certain spaces. It was and is not based on a scientific or traditional understanding of city functioning. It separates natural wholeness and the harmony of many of family and human instinctual behavior patterns into large mono-lithic areas of similar functions. It could only arise in industrial cities, where land proximal to working was becoming scarce.



WITHOUT RULE OF LAW - ZONING DISAPPEARS

When zoning disappears, there will be a re-emergence of the natural influences of orders spatial arrangements of uses. The efficiency of the proximity of uses to each other will be one factor that drives their arrangement. How much time or effort is needed to bridge between the various work spaces or other functions. Another factor will be the mitigation of nuisances those uses create. nuisances are things such as smells, loud or disturbing noises, or other hazards.

IF YOU REMOVE ZONING:

FAMILY 1

Once artificial legally enforced separation is removed, the family use behavioral pattern will return to completeness. The land use map, as shown above will, become a micro-scalar fractal pattern of the family, changing rapidly each day based on the necessity of the moment, the investment in the infrastructures, and the inheritance of ritual and skill. Each color defines a different use within each component of the SeaStead.

SEASTEAD VILLAGE ZONING

FAMILY 1

FAMILY 2

FAMILY 3

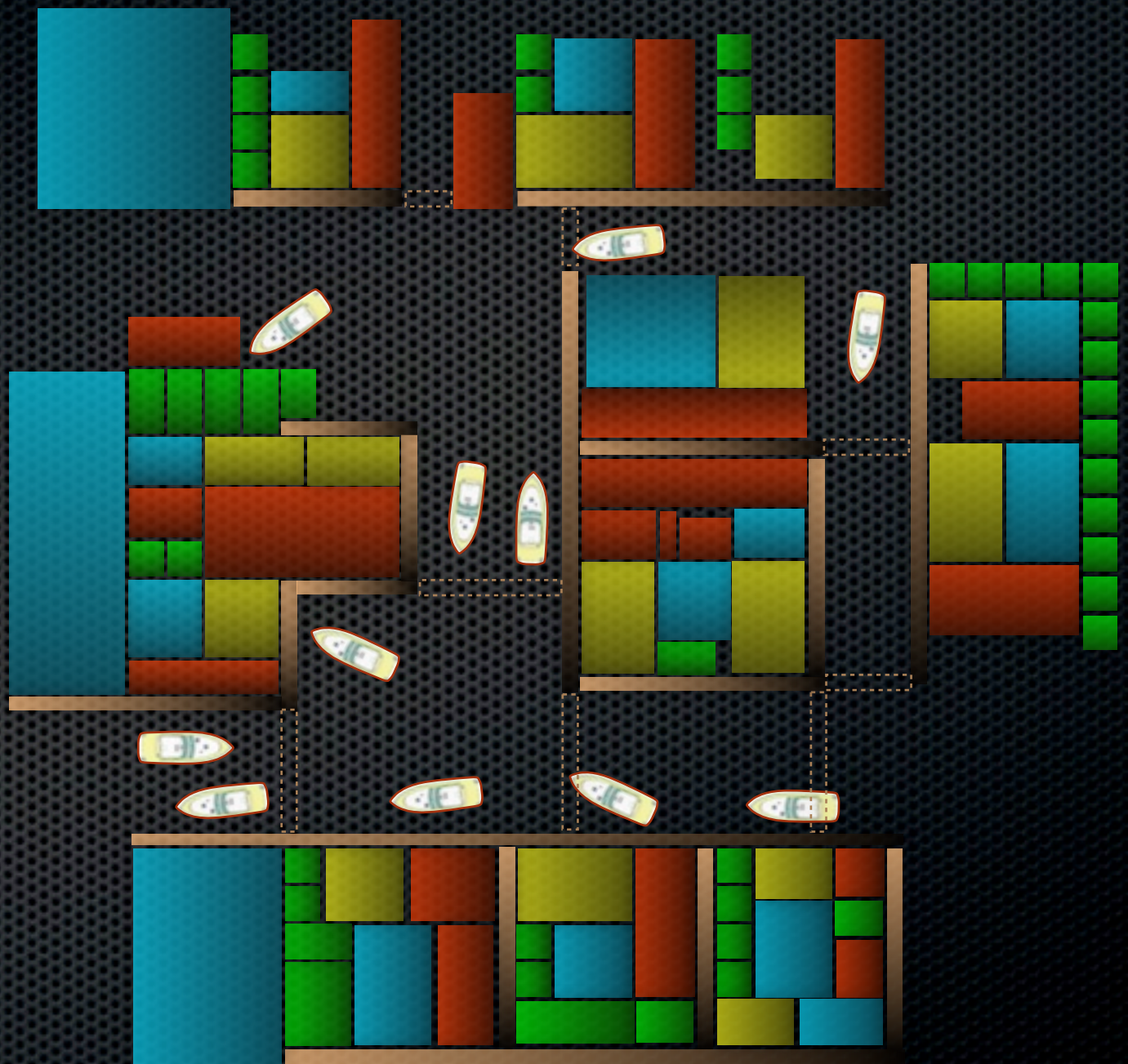
The SeaStead Village space use map would look like a chaotic patchwork quilt of various sizes of use colors and shades or color gradients that cycle through the hues of the rainbow. The SeaStead Village would be a vibrant twinkling collection of colors uses changing throughout the day, the month and the seasons. These are biologically driven instinctual behavior patterns applied to spacial order. I call them Use Pattern Spaces. When designing larger SeaStead Cities, they are the touchstones of ultimate efficiency.

THE SEASTEAD VILLAGE

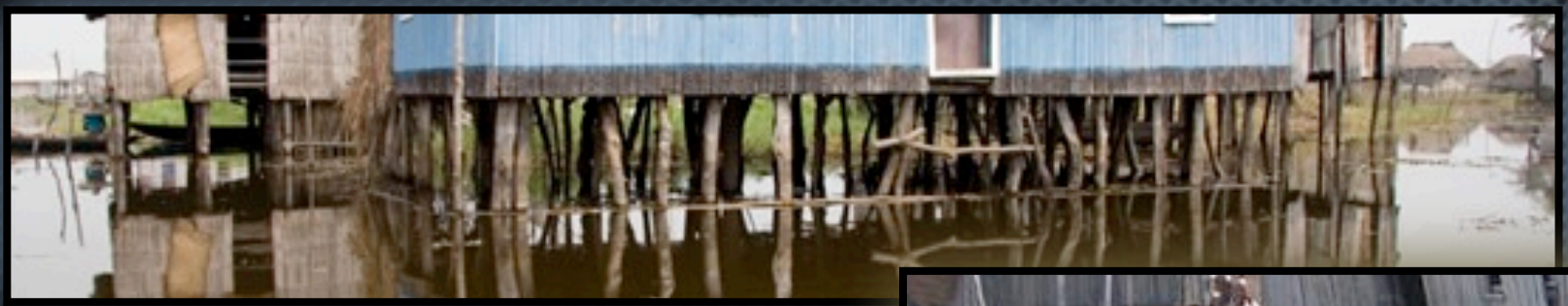
The SeaStead Village is shaped by the same forces that shape the SeaStead itself. The interior open space will serve as the village square. Perhaps having social functions as well as economic functions. It this example, it may also be much smaller.

SHAPE

The shape and arrangement of the village will evolve daily. It will consist of a collection of related families moored together. Ramps and walkways may connect all the floating structures together with bridges over the water ways. The various uses may or may not be gathered in common areas.

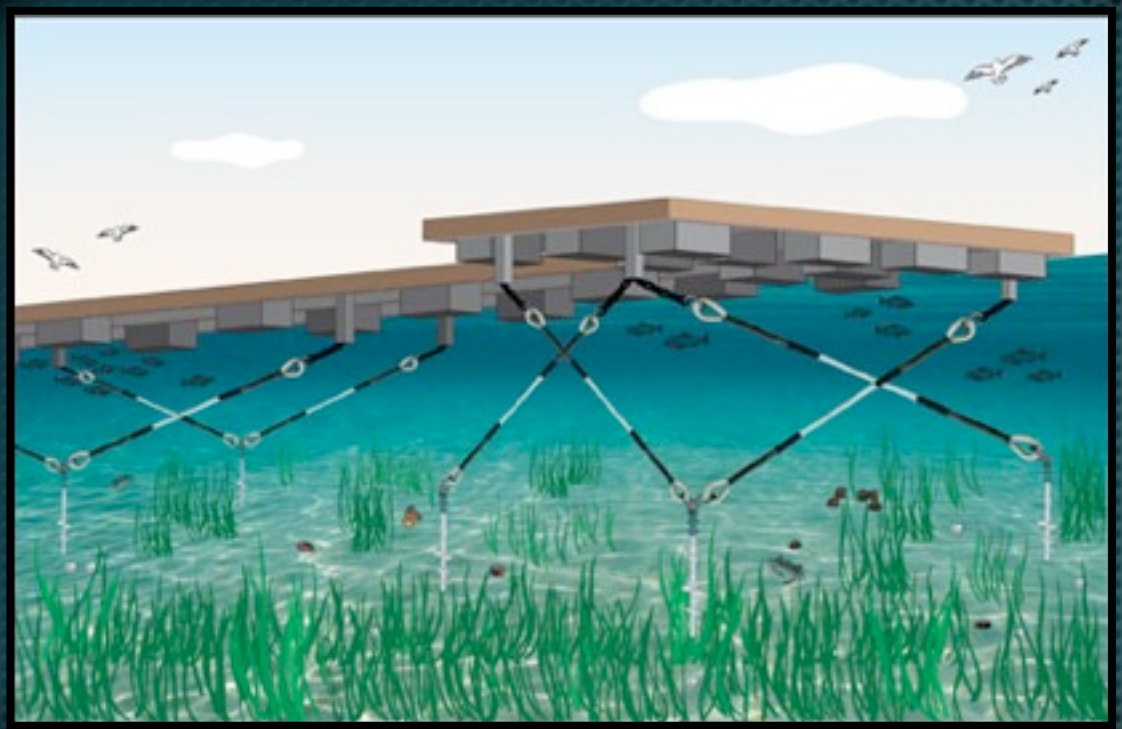


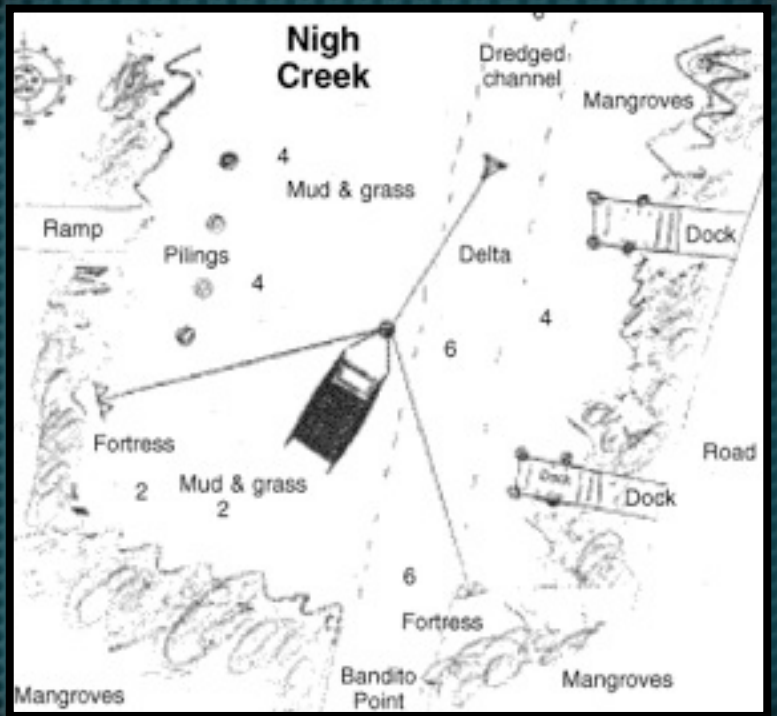
VILLAGE PHYSICAL DETERMINATES



The physical layout of SeaSteads in the Village will be determined by several factors. The primary factor will be the type of mooring system that evolves. The mooring system is how the boats are anchored to the sea floor or to each other. This will determine the shape of the SeaStead Village, its density and the proximity of SeaSteads to each other. Another determinate of shape is the size, shape and speed of the boats that are needed. Another important factor is the type of Food Production Complex that is created. And finally, the Network Interface - how and where boats will have access to the external network.

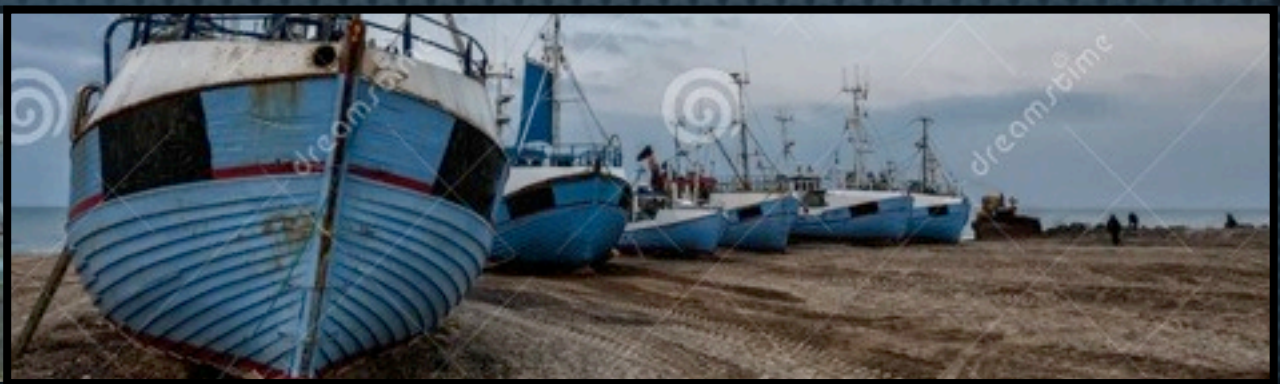
MOORING SYSTEMS





The Mooring System determines the amount of movement each SeaStead can do in proximity to its neighbor. This will then determine the overall shape of the Village, its density, and proximity of each SeaStead to each other. There are 2 ways existing shallow water Villages use to stabilize vertical movement: Stilts, Mooring Lines. Open water SeaStead Villages may employ other methods to stabilize vertical distance. For example, above water or below water vertical horizontal braces.

LAND VS WATER SPACE CONTROL



Compared to planning and design cities on land, there are specific challenges that come with living on top of water. Water is very dynamic. The ability to move horizontally allows SeaSteads to possibly collide with each other. If they are moored close to each other, even small amounts of movement could cause damage to structures. The action of waves also brings many force vectors of tension and compression forces. Land buildings have static vertical compression forces. Another factor is the ability of the food production facilities to move.

LAND HORIZONTAL CONTROL

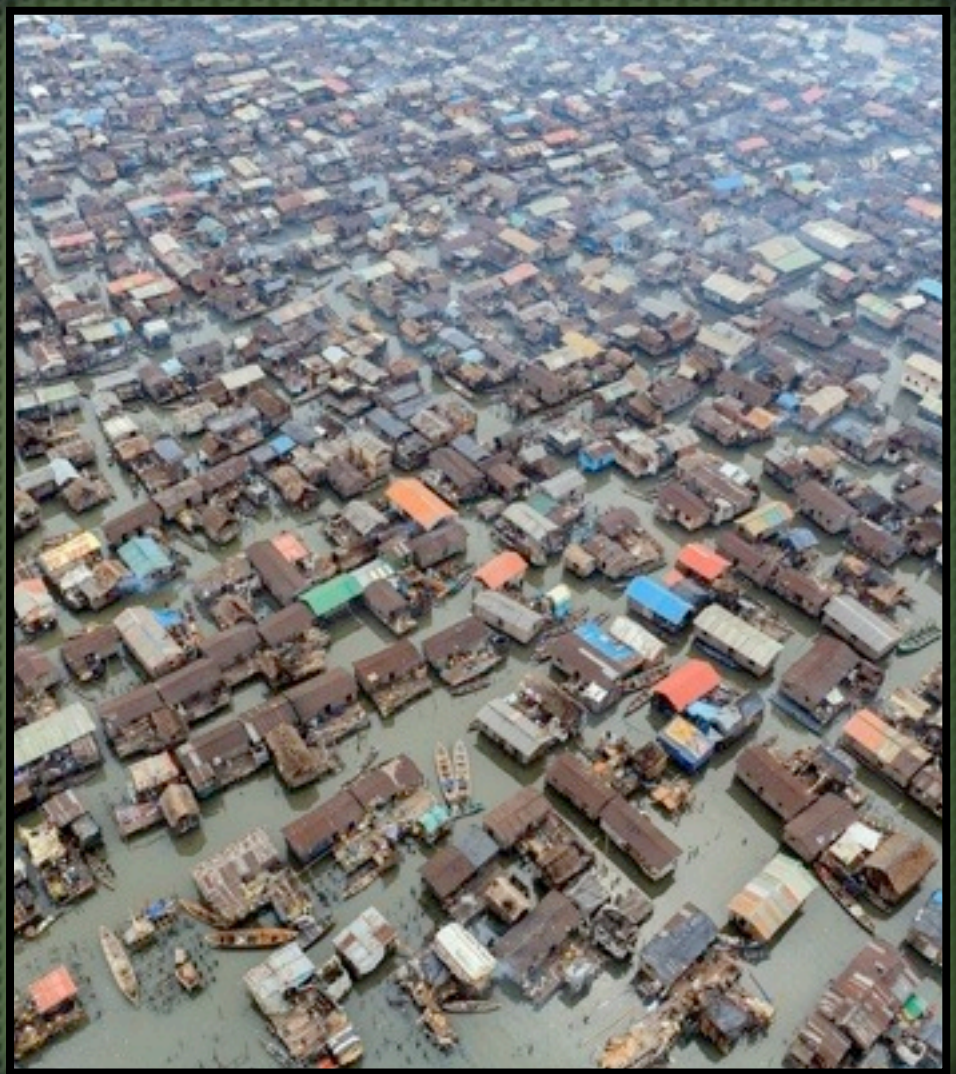
When layout out subdivisions of property on land, the horizontal movement is assumed to be static or fixed. The focus of land design is maintaining certain critical distances between lots to maximize the amount of lots created. Distances between farmsteads is usually not a critical factor, but rather the placement of residence is situated where animal or crop development is maximized.

SEA HORIZONTAL CONTROL

The mooring systems used by boats to control horizontal movement are either anchoring to the ocean floor with anchor or series of anchors or tying the boat to a pier or pier like structure. Tying to a pier allows for much closer horizontal spacing that anchoring to ocean floor. Also note in the right image, the distance from the pier is equal to the distance between each boat.

STILT SPACING PATTERN

GAVIN, BENIN AFRICA

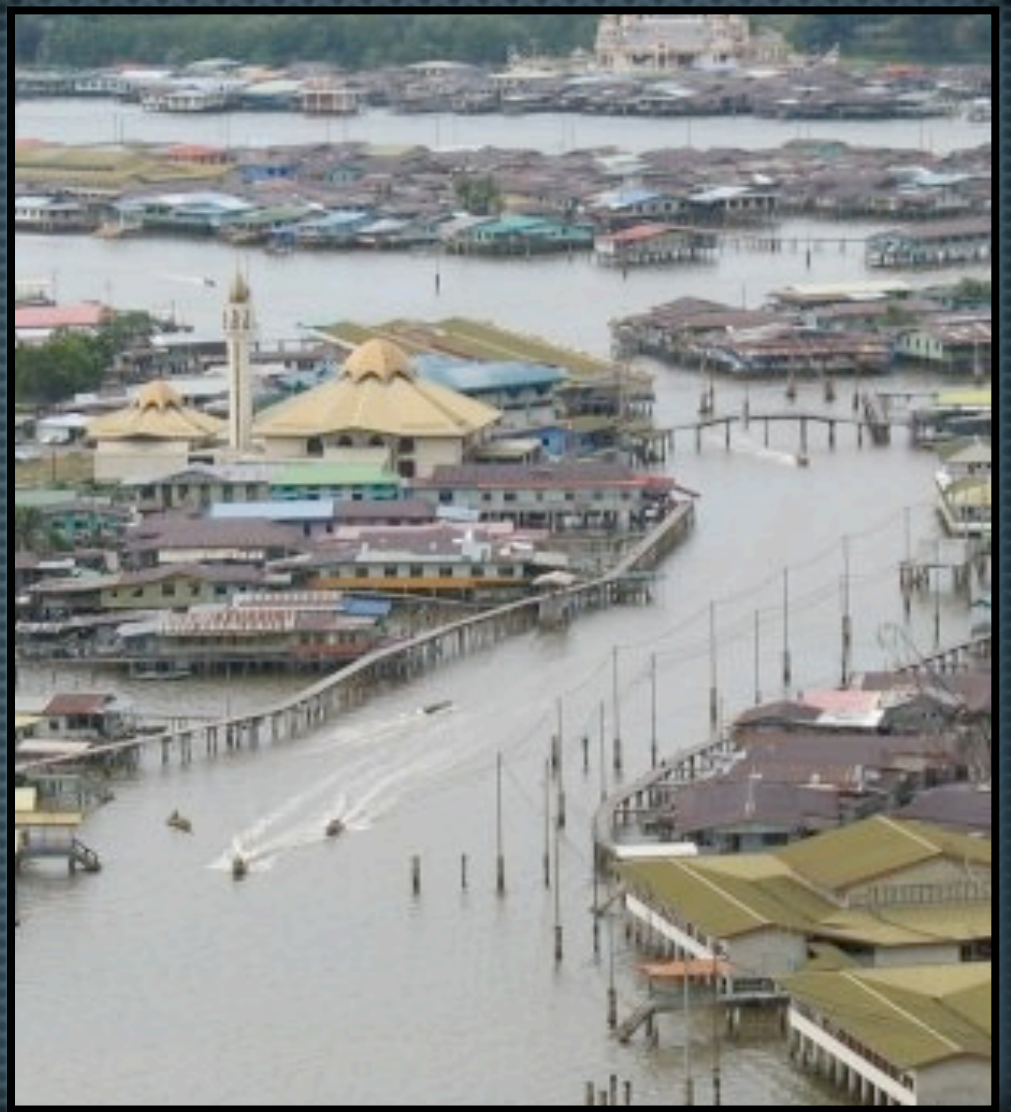


MAKOKO, LAGOS AFRICA

Stilt spacing shallow water villages have development patterns that mirror land based development.

STILT SPACING PATTERN

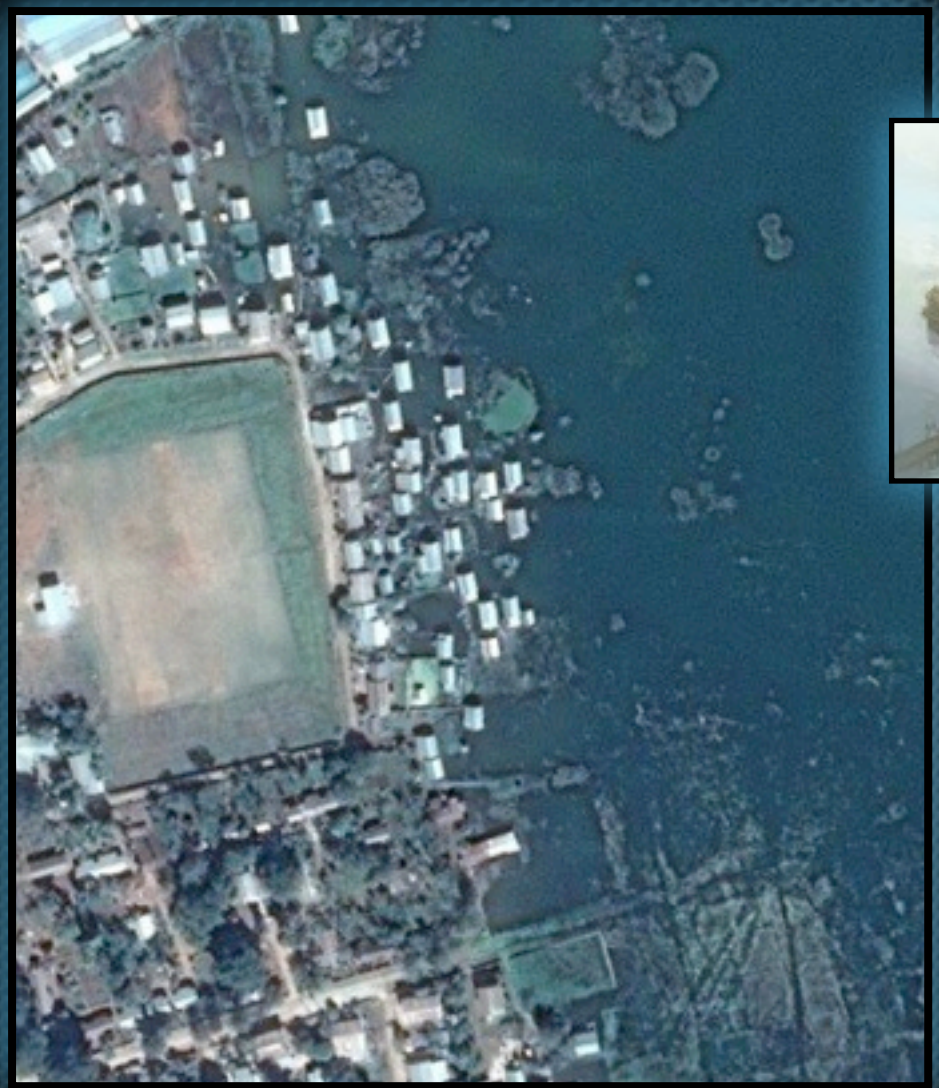
KO PANYI, THAILAND



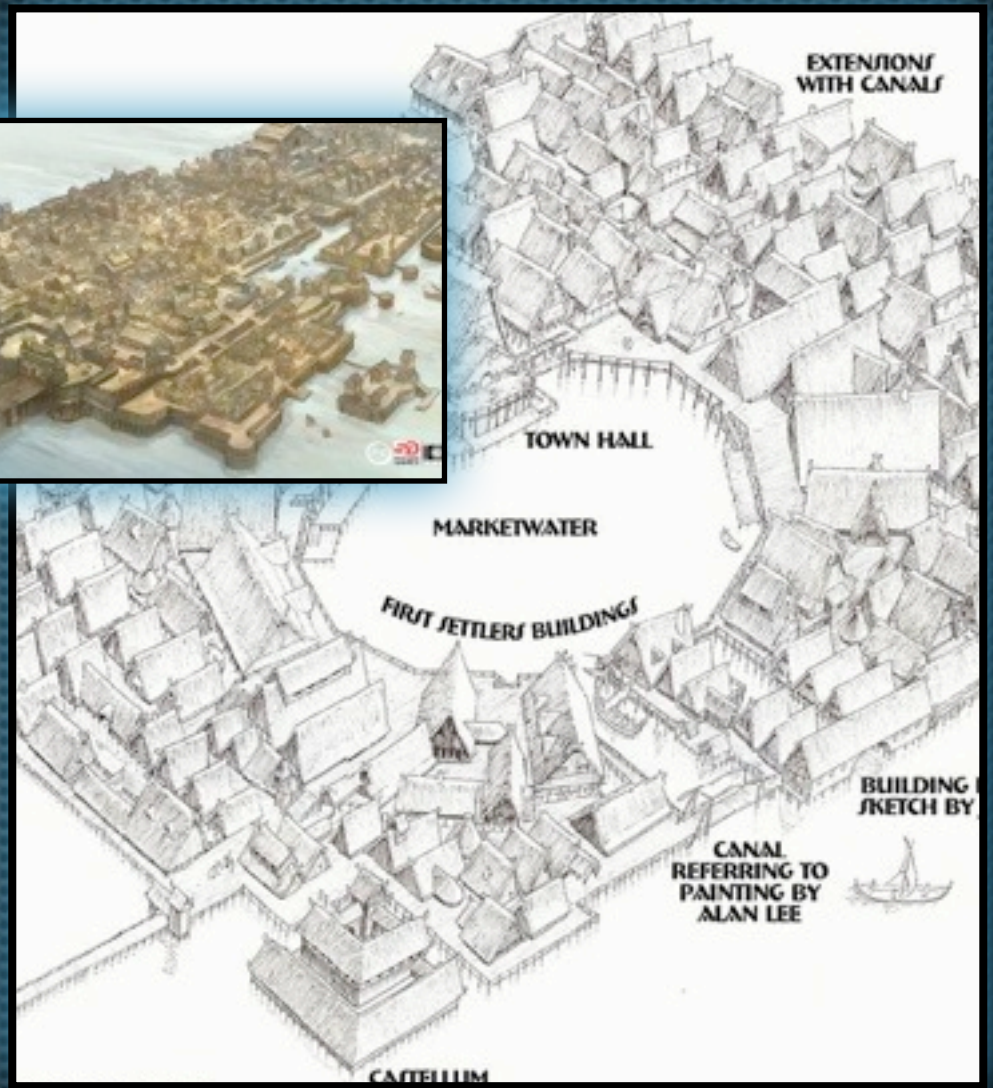
KAMPONG AYER, BRUNEI

Stilt spacing in deeper water appears to encourage development patterns that highly dense.

STILT SPACING PATTERN



KAY LAR YWA, MYANMAR

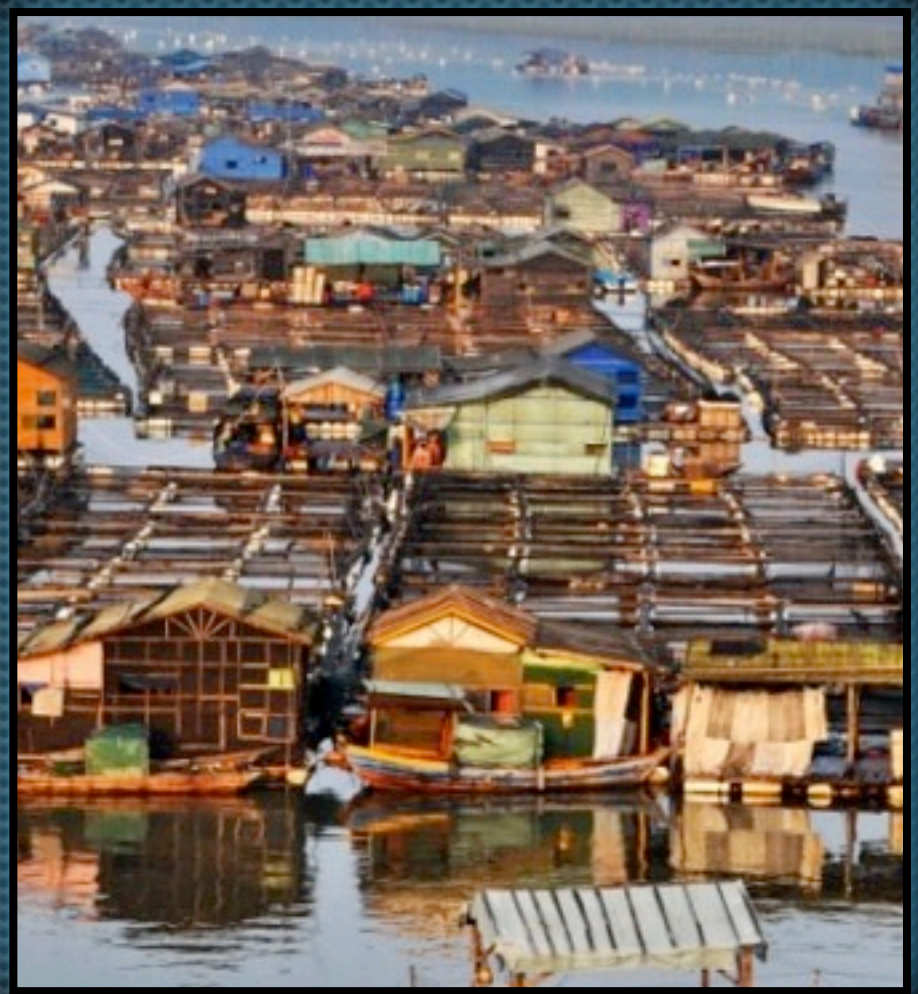


LAKE TOWN, THE HOBBIT

The imaginary town of Lake Town, in the book and movie The Hobbit, the stilt based town has a layout pattern nearly identical to a land based city.

MOOR SPACING PATTERN

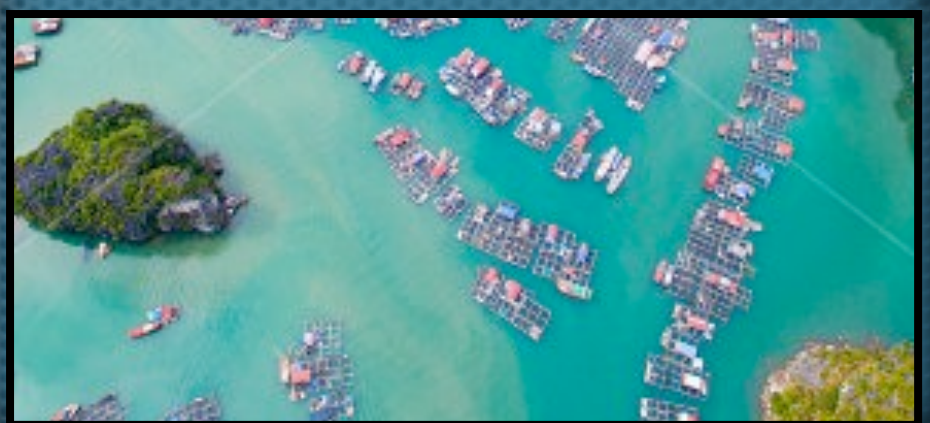
BOAT CITY OF ABERDEEN HARBOR, HONG KONG



TANKA PEOPLE, CHINA

The spacing of ‘residential’ units in moored cities, such as the Boat City of Aberdeen Harbor, and Tanka People are much denser. The floating platforms moor together and use buffers to lesson the impact of bumping.

MOOR SPACING PATTERN



SEATLE, WASHINGTON

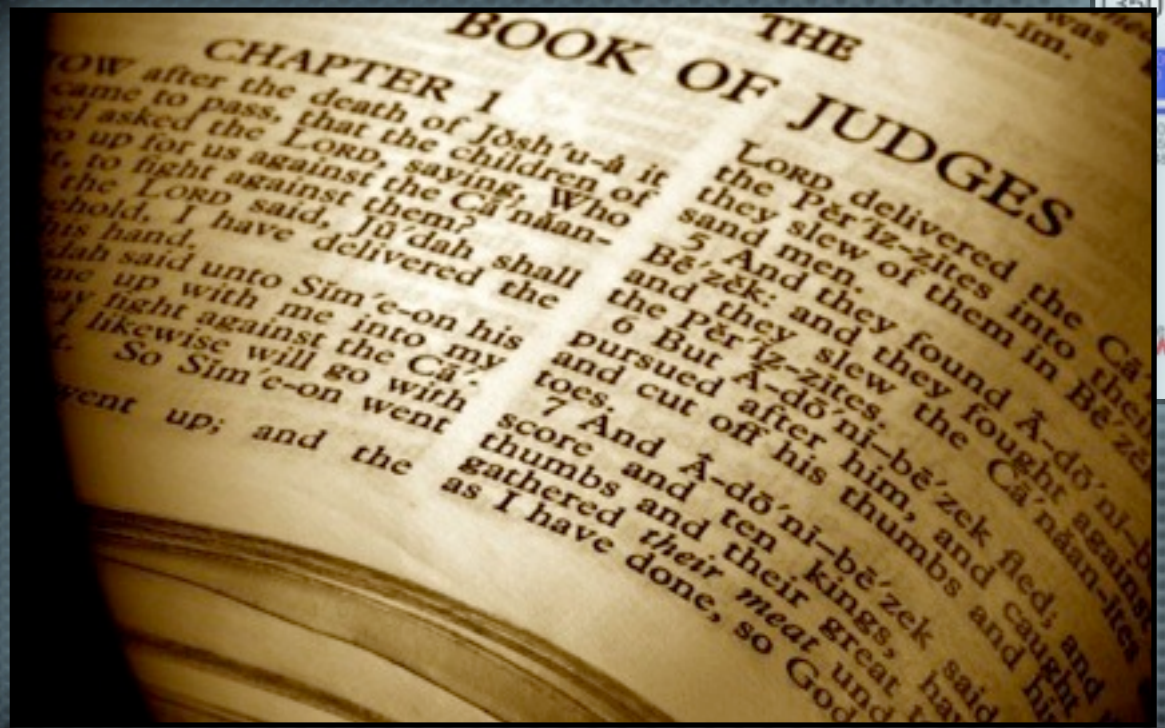
HALONG BAY, VIETNAM

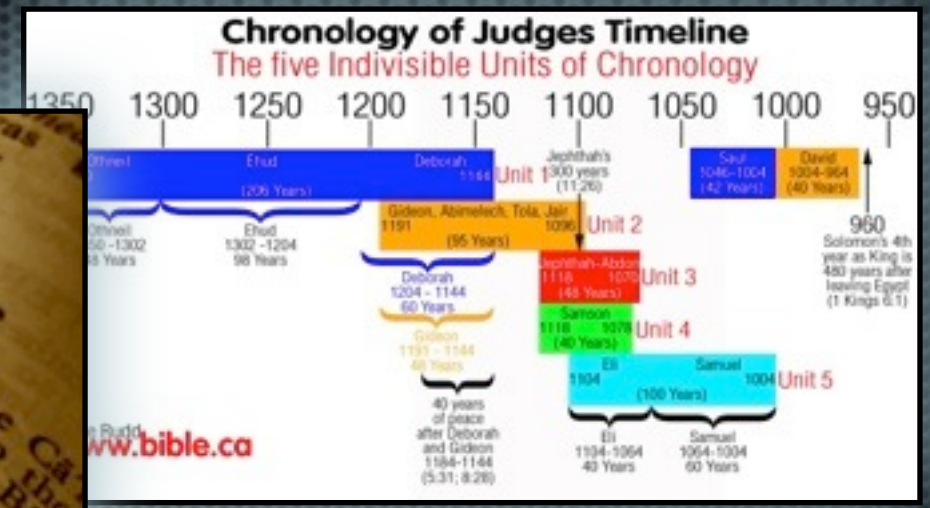
Seatle's spacing is also dense and very ordered, where Halong Bay is 'loose clusters' that form linear water ways between.

ELDER OF THE TRIBE

Tribes will likely be led in gerontocracies, which is where leadership is done by elders. The family instinct will encourage allegiance to leaders who are older and wiser than the offspring. Plato favored such as system and was known to have said, "it is for the elder man to rule and for the younger to submit". Many cultures still have elder rule. Those having the most power may not be in formal leadership positions, but may dominate those who are.

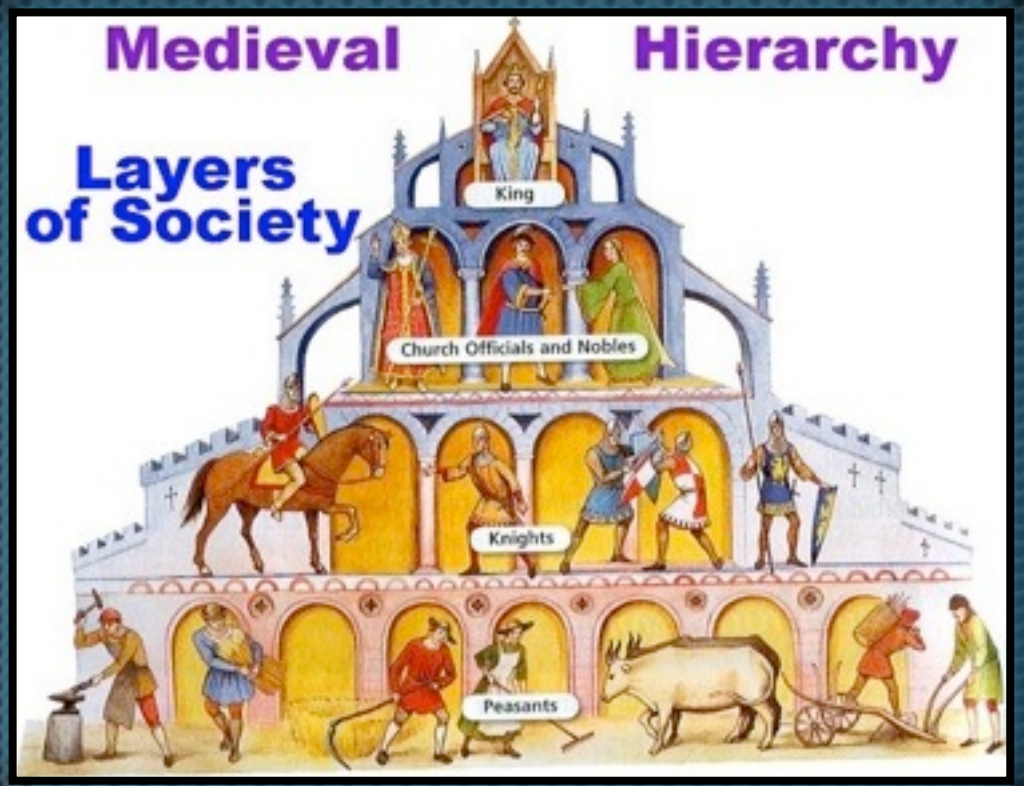
JUDGEMENT SYSTEM





Also, while not an expert of legal systems of moral control, it would be likely that in an elder system like a gerontocracy, the majority of conflicts would be resolved via the evolution of a natural law system of judgement. The Bible shows that such a system is a possible and there may be examples of this still active today. This system arose in the Bible when Moses became bogged down with the constant need to resolve the quarrels of those in the 12 tribes of Israel who left Egypt.

PROTECTOR LEADERS



SeaStead Villages will need protection from outside forces; Pirates or Hostile Navies. The leaders of the SeaStead Villages are the protectors as well. The SeaStead and SeaStead Village will likely have minimal vertical power structure because many of the "peasants" or Sea Farmers will be armed with powerful weapons. It is when the leaders restrict the lower classes from owning weapons that they become the oppressors. SeaSteads will mirror the American and Swiss tradition of all individuals being heavily armed.

EXTREME SEGREGATION

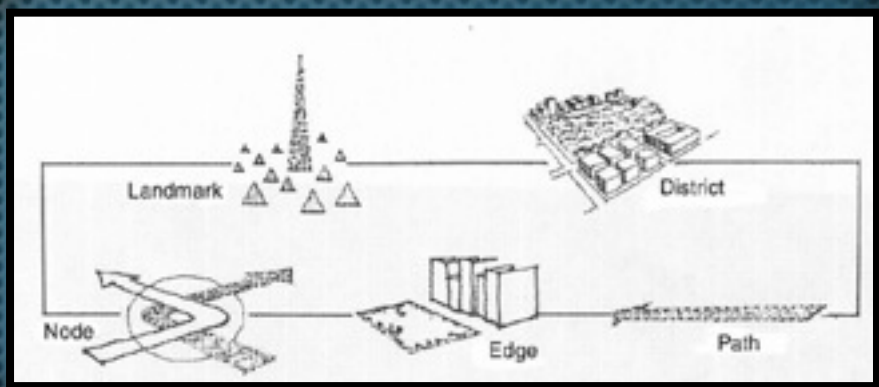
The Tribes will align themselves with tribes of similarities. This will be based on similar language, religion, culture and ethnicity. There appears to be a Law of Natural Segregation that is part of instinctive human behavior. Tribes should exhibit and instinctive tendency to favor those who are most like themselves. This is not an endorsement of racism. Segregation can be based on race, but it is also just as likely that it is driven by any perceived difference: language, sex, wealth, intelligence, and membership in a group etc. The ocean will allow those to congregate closest to those they feel the most similar to.

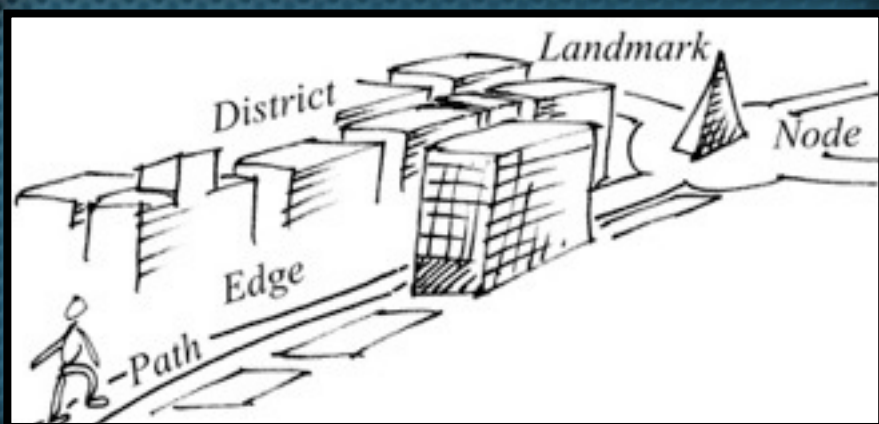
NETWORKS...

Networks are a critical component of the any System. The irony is that water allows for the creation of nearly perfect networks. Water is extremely efficient to travel on, it allows for direct routes from nearly any point around a perimeter, and yet, for SeaStead Villages, water based networks will be very complicated and important part of SeaStead Village form factors.

WATER NETWORKS

There are various types of networks associated with SeaSteads. Internal and External water Networks will develop. The size and scale of the Village will determine how many and what size those water networks will be. They will differ from Land Based Transportation Networks in many ways. Since water is navigable, roads outside the boundary of the village will not be 'limited to narrow stretches of designated Right of Ways, but rather cover the full spectrum of the compass. Water form most efficient connection between various points. It uses less energy to move heavy items.





WATER WAYS (STREETS)

The critical network of SeaStead Villages will be the network of water ways that weave through the floating structures. These networks will need to be wide enough to allow large craft that carry supplies, food production craft, or multi-laned craft to easily navigate. Just as on land, the networks are best if they are hierarchal and overlapping. Networks should not be indirect or inefficient.

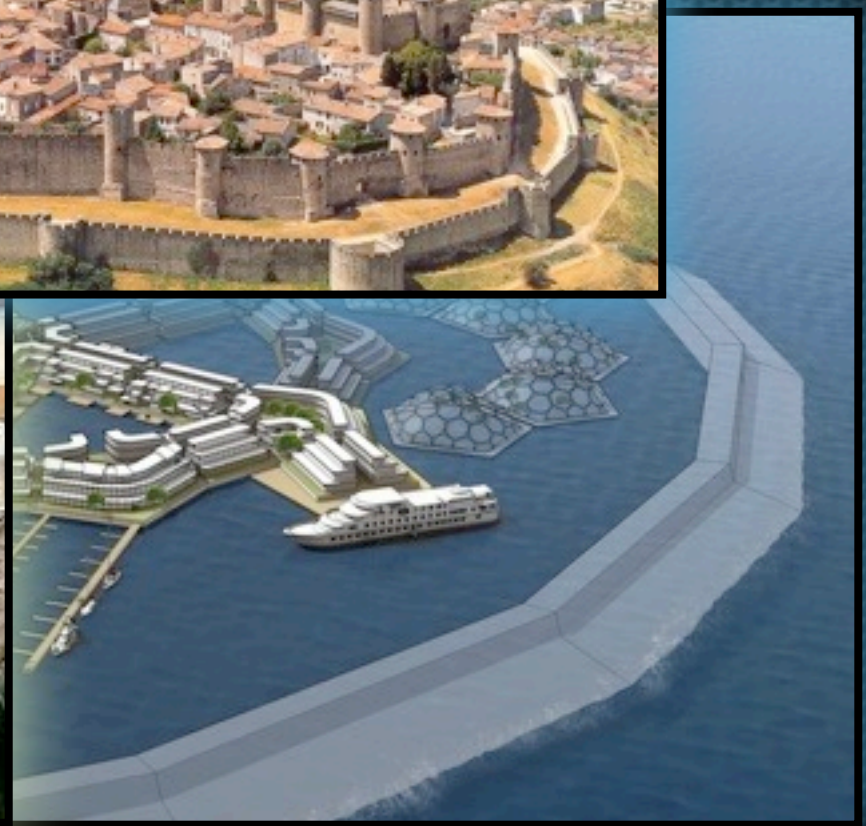
SEAWALKS (SIDEWALKS)

The pedestrian network within the SeaStead Village will likely be strongest where access to economically sensitive structures are. Also, if short distances are required to be traversed quickly, the pedestrian network will evolve as those mini-networks are united. Pedestrian networks are a low priority on SeaSteads and Villages.

BRIDGES

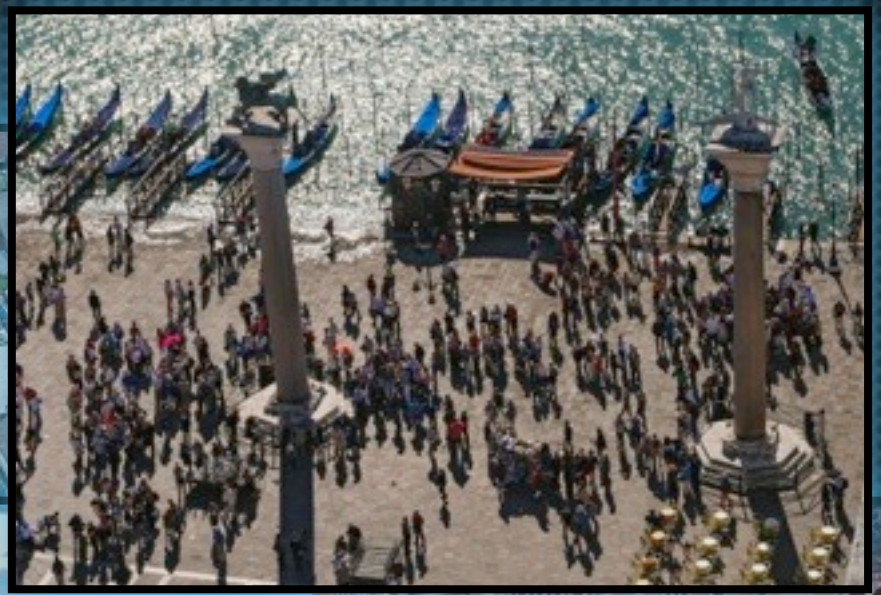
Bridges will be an important part of a mixed dry network within mature SeaSteads. The investment will be substantial but the return economically for a bridge structure will be very limited. A networks traffic can be measured in pedestrians or vehicles per day or per hour. The best measurement would be in the value of cargo per time.

SECURITY



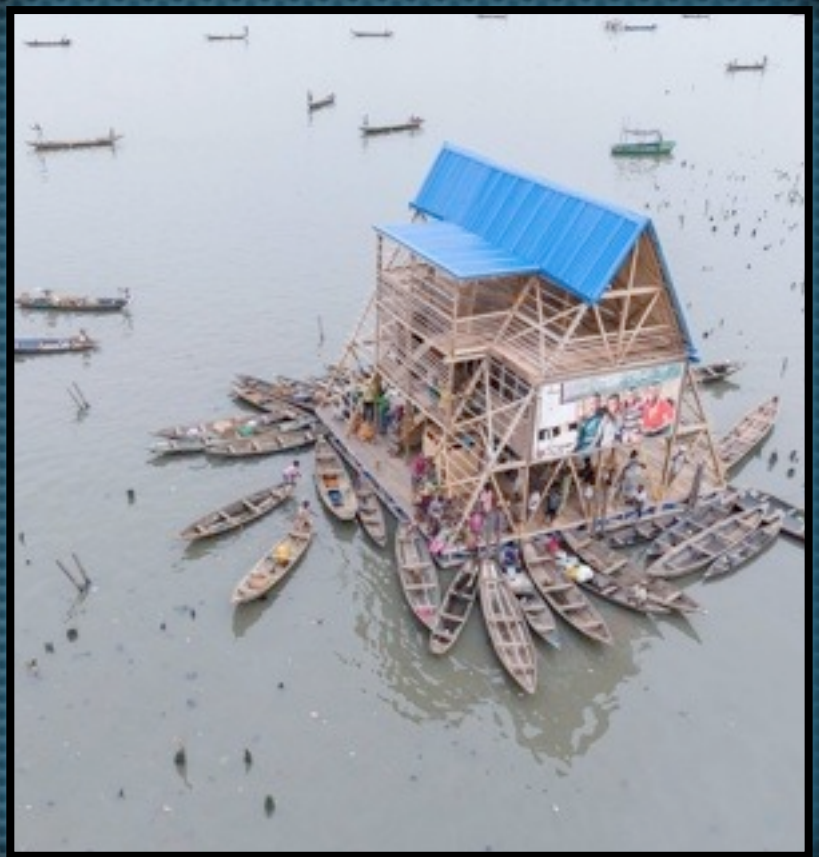
SeaStead Villages will need protection from 2 primary forces; Pirates and Waves. The protectors of Villages are the leaders of feudal societies. They can also become the oppressors. The SeaStead and SeaStead Village will likely have vertical power structure where all the “peasants” are armed with powerful weapons.

SOCIAL SPACES



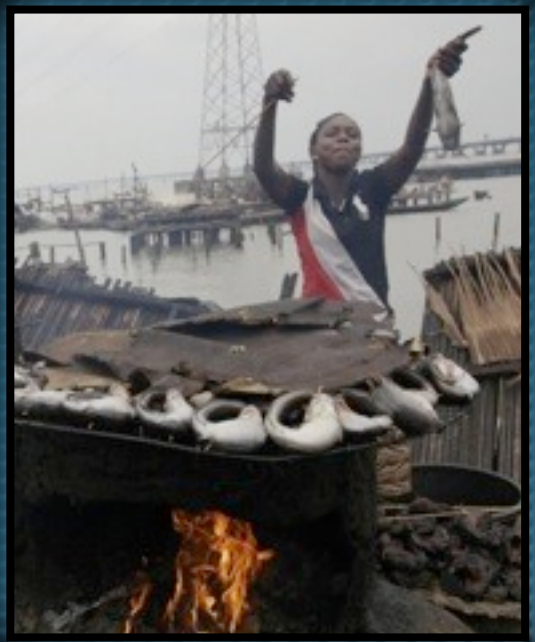
Social spaces with the SeaStead Village can be related sports, religion, markets, or restaurants. They may be water based or they may be land based. They are most likely going to occur at the transition areas between water and land where economic or religious events occur.

SOCIAL SPACES



Social Spaces are places where people come and interact in groups of 2 or more. Some social spaces such as town squares or parks are public places; others such as bars or shopping malls are private. Educational & Religious spaces are also social spaces. Seastead Villages with sufficient enough people to support independent structures would form spaces they deem necessary or important.

MARKETS

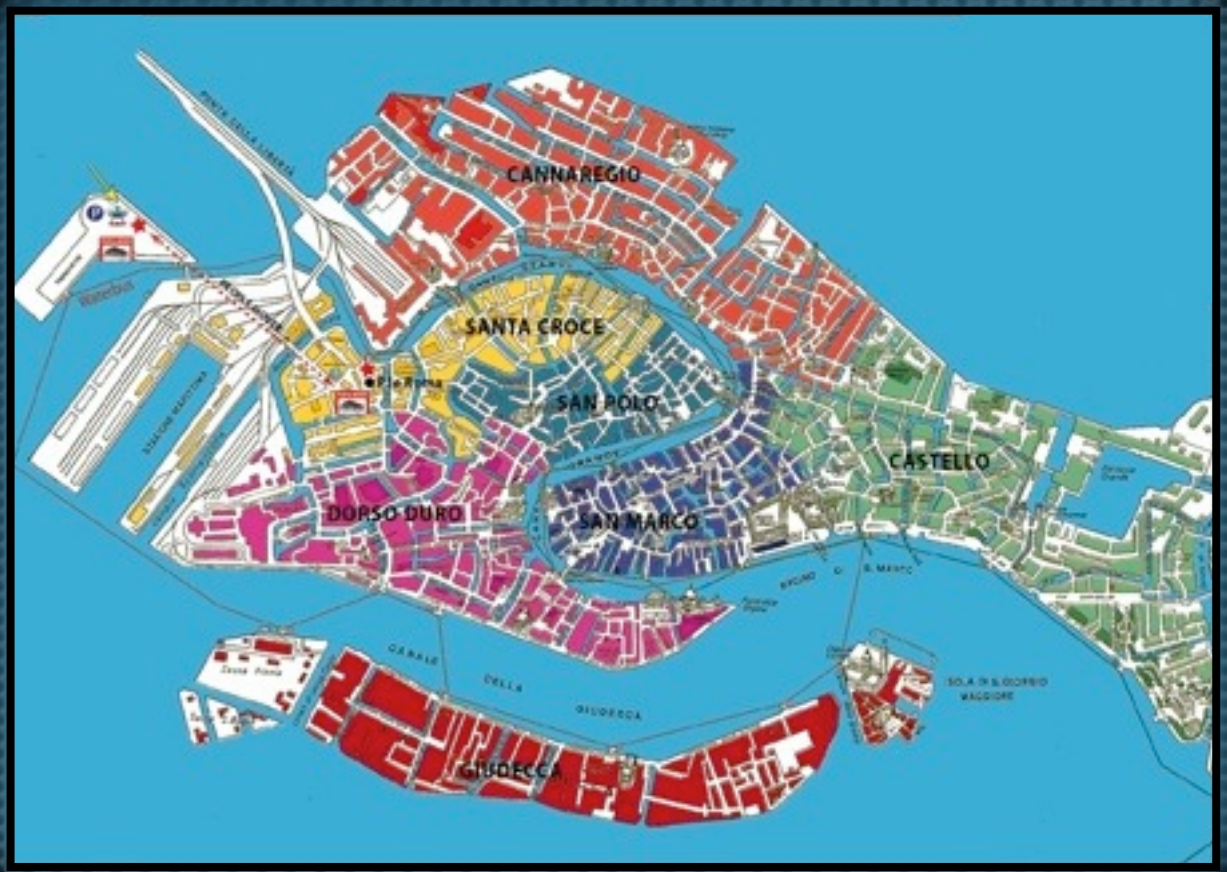


SeaStead Village markets will likely quickly evolve the most efficient way to get goods and services to Villagers. Its likely that floating stores will carry goods to each SeaStead. The isolated SeaStead Village will be visited by large ferries that can exchange hard to get items for Seafoods produced in the Village.

FRACTAL SCALE 3
FEDERATION OF VILLAGES

The SeaStead Village can also be scale up by combining Villages into a new super Structure. The determinates of the Mega Seastead Complex or Federation of Village's form will be Another important issue will the proximity of the Mega SeaStead to sources of food.

FEDERATION OF VILLAGES



The growth and specialization of SeaStead Villages can lead to the emergence of Federations of Tribes. The picture above of Venice's 8 districts could be a natural SeaStead architype or basic shape. Large water highways will traverse the Villages. The larger structure, or Federation, can now cooperatively finance more complex travel and communication infrastructure.

MIXED NETWORKS

Also, looking more closely at the complex structure of the Venice transportation and movement networks, you'll note the canal system that forms a 3 layered network of movement around Venice. The primary network is the large boating Grande Canal. The secondary network is form by smaller canals, and the third network is the pedestrian paths that flow around major buildings and areas.

FRACTAL SCALE 4: MEGA-SEASTEAD COMPLEX

A real Seastead would result in something looking more like the Island City of Mala, Maldives. Please note in the image the solid interior space. This city complex acts like a normal city, with small vehicles, parks, open spaces, etc. It also has a high density with many residential apartment buildings.

SCALING NATIONS UP

Large Nations would emerge based on new STICKINESS FACTORS. If dependencies were necessary it would be more likely that larger and larger Sea Cities would form. Some of those factors are:

i) Wave Barrier to expensive to

ii) New Materials Difficult to Procure

iii) Those unable to afford own craft

iv) Widowed, those who lost family structure

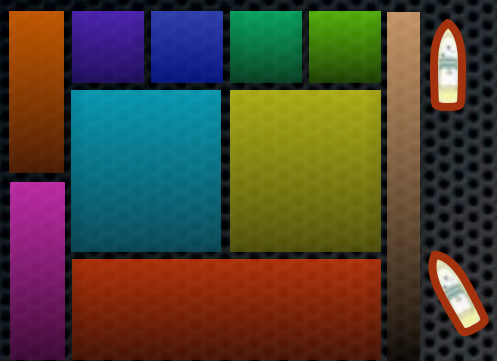
EVOLUTION OF SEASTEADS

The SeaSteads could evolve to become larger and larger and produce more and more food as technology increases the production of individuals. Rather than forming a SeaStead Village, mega farms could emerge.

These mega SeaFarms might be able to produce a sufficient amount of food to support people living in non food producing SeaStead Villages and Mega City Complexes. These people can then specialize in non food productive activities. The emergence of a Blue Economy, as it called because of its emphasis on SeaSteading related products and services, would become ever more specialized and efficient. The return to many of the problems people have on land would emerge with government if they become too dependent on others for their basics instinctual needs.

WHAT ENCOURAGES CITIES TO FORM?

Easy SeaStead Life vs Hard SeaStead Life



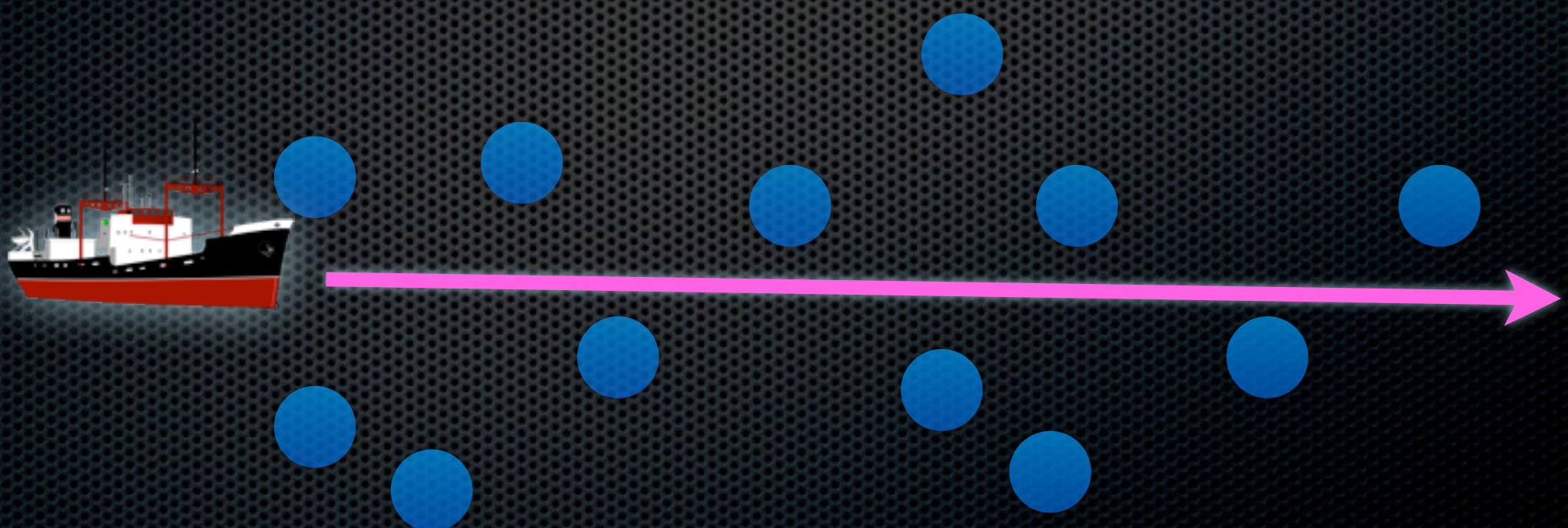
Remain Independent
Self-Sufficient

Large City
Highly Dependent

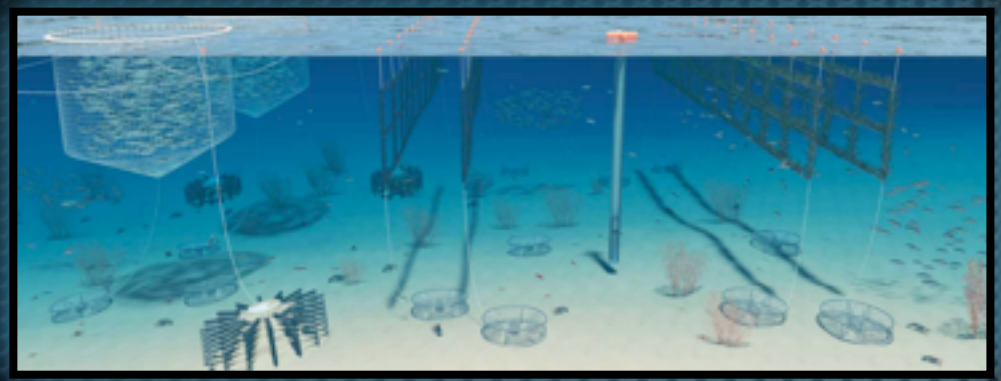
There are many factors that can contribute to the formation of Cities. My current understanding of City Formation is due to Dependencies or lack of Self-Sufficiencies. The more people demand others are responsible for them, the more likely they are to live in cities. Cities encourage powerful governments - primarily due to the instinctive nature in humans to take from others.

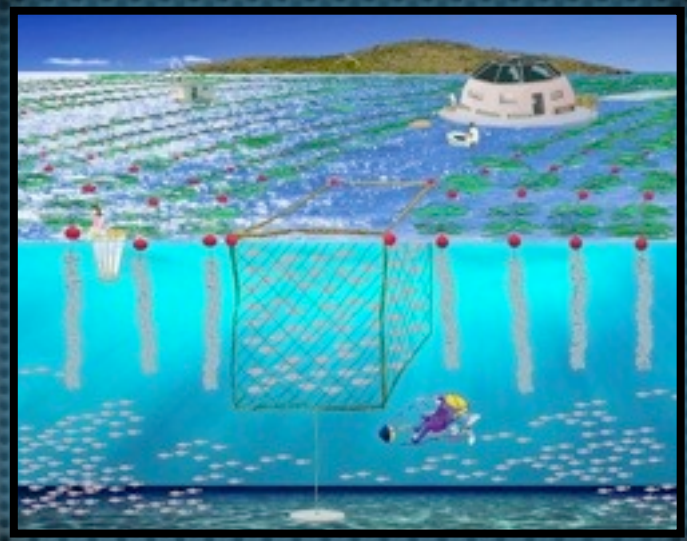
BLUE ECONOMY

Merchant Trade Routes between SeaSteads and SeaStead Villages will provide many opportunities to partake in the Blue Economy. This trading system will evolve as a partnership between land based Cities and Sea based SeaSteads.



BLUE ECONOMY



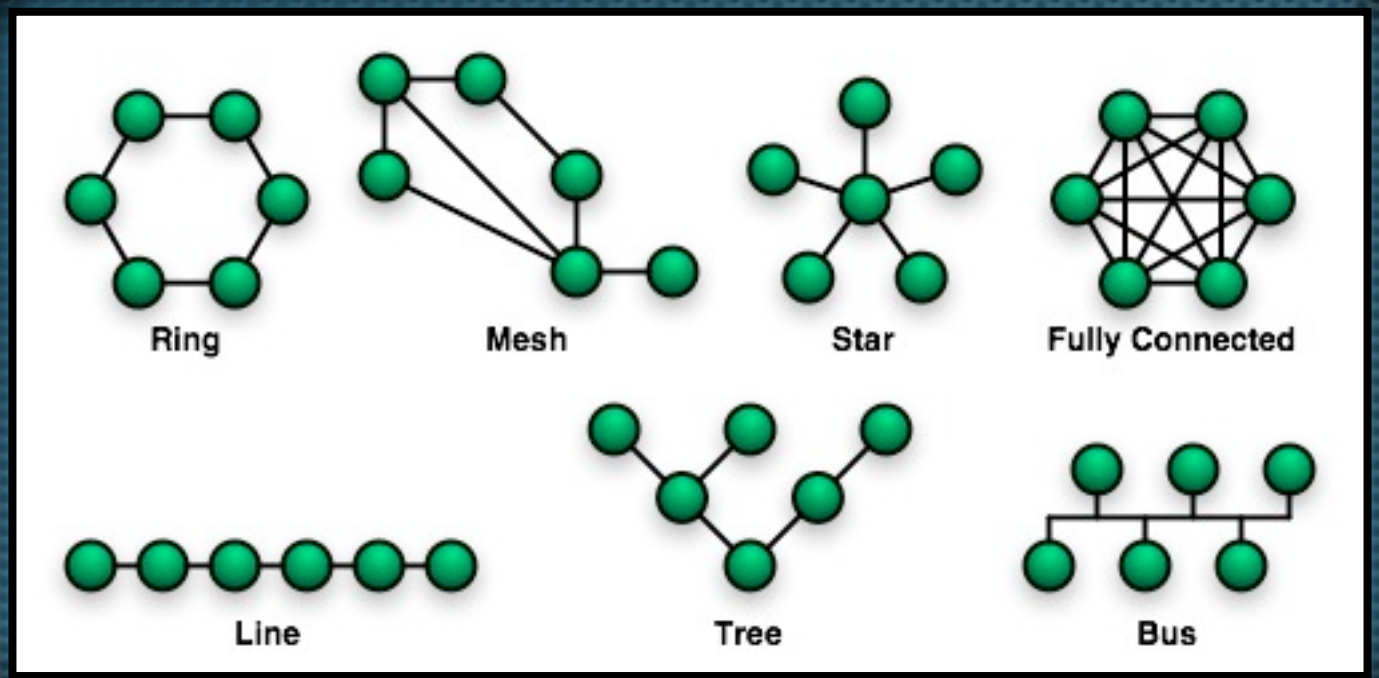


The SeaStead Institute has very good videos describing the Blue Economy. Blue Technology is a growing field including aquaculture and all technologies related to the ocean. They foresee a coming Blue Revolution where the oceans are harnessed to address many of the worlds problems.

Peter Drucker predicted “aquaculture, not the internet, represents the most promising investment opportunity of the 21st century.“

A Blue Revolution in ocean farming technology would launch seasteads to center stage. Project OASIS envisions a future landscape populated by seastead “oases,” and we would agree. The development of small independent SeaSteads would allow a vast proliferation of new ‘governments’ and freedoms. And these freedoms would be the driver of new forms of economic development.

COMMUNICATION NETWORKS



Communication occurs between all people. There are many types of communication networks: Computer, Internet, & Telephone Networks. The complexity of networks would evolve from technology adapted work on the ocean over great distances. It would seem more likely that SeaStead Villages would have more advance and more complicated communication networks than isolated Seasteads. The proximity of people to each other increases the need and ability to create affordable networks. Initial SeaSteads would probably communicate via Satellite over the vast distances.

FEATURES OF COMPLEX SYSTEMS

Cascading Failures: Due to the strong coupling between components in complex systems, a failure in one or more components can lead to cascading failures which may have catastrophic consequences on the functioning of the system.

Complex systems may be open: Complex systems are usually open systems — that is, they exist in a thermodynamic gradient and dissipate energy. In other words, complex systems are frequently far from energetic equilibrium: but despite this flux, there may be pattern stability, see synergetics.

Complex systems may have a memory: The history of a complex system may be important. Because complex systems are dynamical systems they change over time, and prior states may have an influence on present states. More formally, complex systems often exhibit hysteresis.

Complex systems may be nested: The components of a complex system may themselves be complex systems. For example, an economy is made up of organisations, which are made up of people, which are made up of cells - all of which are complex systems.

Dynamic network of multiplicity: As well as coupling rules, the dynamic network of a complex system is important. Small-world or scale-free networks which have many local interactions and a smaller number of inter-area connections are often employed. Natural complex systems often exhibit such topologies.

May produce emergent phenomena: Complex systems may exhibit behaviors that are emergent, which is to say that while the results may be sufficiently determined by the activity of the systems' basic constituents, they may have properties that can only be studied at a higher level.

Relationships are non-linear: In practical terms, this means a small perturbation may cause a large effect (see butterfly effect), a proportional effect, or even no effect at all. In linear systems, effect is *always* directly proportional to cause.

Relationships contain feedback loops: Both negative (damping) and positive (amplifying) feedback are always found in complex systems. The effects of an element's behaviour are fed back to in such a way that the element itself is altered.

Characteristics

The number of elements is sufficiently large that conventional descriptions (e.g. a system of differential equations) are not only impractical, but cease to assist in understanding the system.

Moreover, the elements interact dynamically, and the interactions can be physical or involve the exchange of information

Such interactions are rich, i.e. any element or sub-system in the system is affected by and affects several other elements or sub-systems

The interactions are non-linear: small changes in inputs, physical interactions or stimuli can cause large effects or very significant changes in outputs

Interactions are primarily but not exclusively with immediate neighbors and the nature of the influence is modulated

Any interaction can feed back onto itself directly or after a number of intervening stages. Such feedback can vary in quality. This is known as recurrency. Such systems may be open and it may be difficult or impossible to define system boundaries

Complex systems operate under far from equilibrium conditions. There has to be a constant flow of energy to maintain the organization of the system
Complex systems have a history. They evolve and their past is co-responsible for their present behavior

Elements in the system may be ignorant of the behaviour of the system as a whole, responding only to the information or physical stimuli available to them locally

Robert Axelrod & Michael D. Cohen identify a series of key terms from a modeling perspective:

Strategy, a conditional action pattern that indicates what to do in which circumstances

Artifact, a material resource that has definite location and can respond to the action of agents

Agent, a collection of properties, strategies & capabilities for interacting with artifacts & other agents

Population, a collection of agents, or, in some situations, collections of strategies

System, a larger collection, including one or more populations of agents and possibly also artifacts

Type, all the agents (or strategies) in a population that have some characteristic in common

Variety, the diversity of types within a population or system

Interaction pattern, the recurring regularities of contact among types within a system

Space (physical), location in geographical space & time of agents and artifacts

Space (conceptual), "location" in a set of categories structured so that "nearby" agents will tend to interact

Selection, processes that lead to an increase or decrease in the frequency of various types of agent or strategies

Success criteria or performance measures, a "score" used by an agent or designer in attributing credit in the selection of relatively successful (or unsuccessful) strategies or agents

HOW TO MAKE SEASTEADS FLOURISH: PROBLEM SOLVED

FRACTAL

MICRO-SCALAR

BASIC UNIT(s) DEFINED & WORKABLE

FINANCIALLY PRACTICAL

MULTI-LITHIC

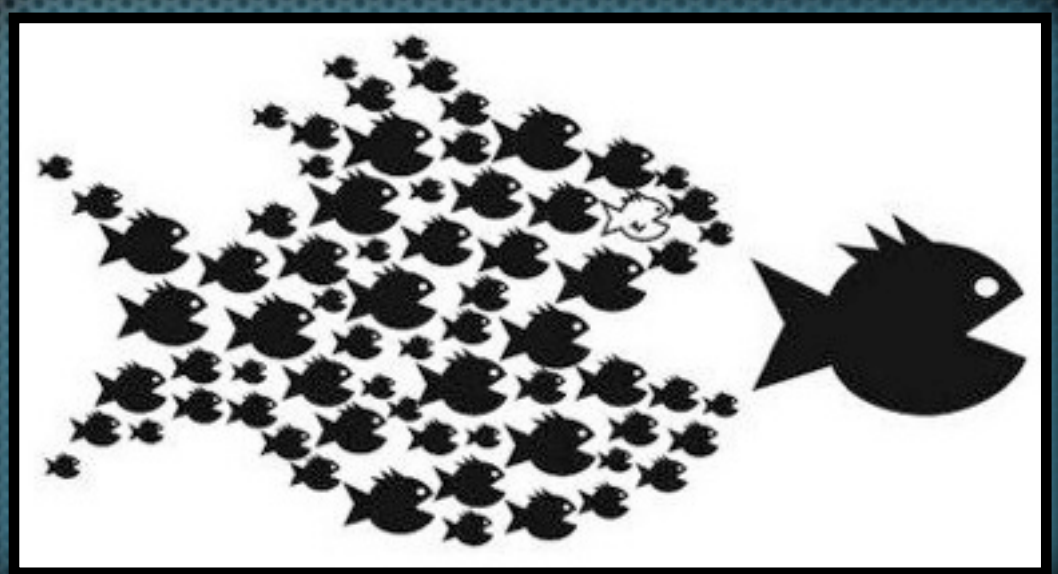
EFFICIENT SPACE

BASED ON HUMAN BEHAVIOR PATTERNS

ATTRACTIVE SMALL GOVT.

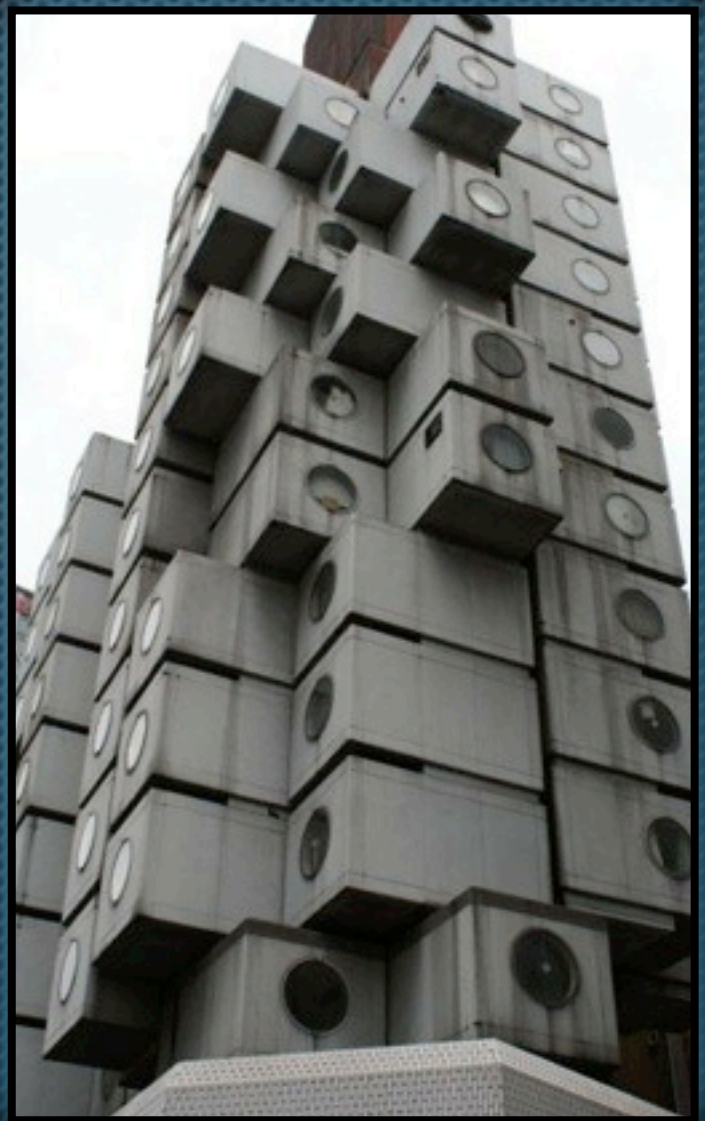
FRACTAL

So in conclusion, understanding the fractal nature of complex systems will help solve the SeaSteading problems that the current crop of prototypes have. Fractal geometry shows us the limits to scaling simple building blocks both up and down. By starting with a complex fractal understanding of Cities, we begin to understand the complex patterns of behavior, agents and objects that a complex system is composed of. We must resist the desire to simply our understanding of complex systems to approach the problem correctly.



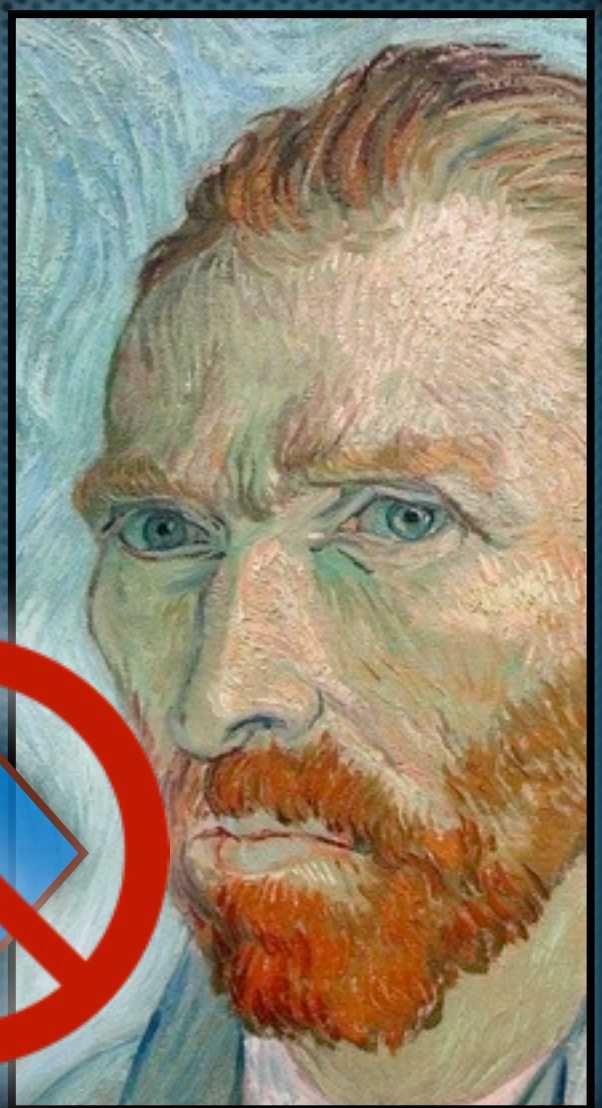
MICRO-SCALAR

Modular doesn't mean scalar. When looking at the prototypes, the creators appear to all assume that land based building and city techniques can be adapted for SeaSteading Life. They have nearly all created City Block size modules. The prototypes then put typical land styled buildings on top of them. The problem is 3 fold: They have made a structure so big and powerful that it is extremely difficult to implement. Second, they have concentrated too many functions in a single part of the design. And third their system has no sympathy for the critical micro-patterns that make up life.



BASIC UNIT(s) DEFINED & WORKABLE

Macro-scale design - by starting with large 'city block' size modular units, the designers hope that a sufficient environment has been created to allow the micro-agents and objects a place to create what they have not. The problems here are many fold. If the basic building block is 1/100th the size of the base, the economic factors will overwhelm the micro-agent. Not only are they un able to afford the project, but they are unable to craft solutions to micro-problems. The basic units of construction must match the agents ability to afford them and ability to create solutions. It would appear the designers have have concentrated all their energy in macro-scale design.



FINANCIALLY PRACTICAL

Joe Quirk gives the iPhone App Store as an example of how to solve the problem of government based solutions. Many of the apps on the App store are free, and most are priced for a few dollars. The range of prices allow people to pick a solution they can afford. The SeaStead prototypes offer only very expensive options for SeaSteaders. They also do not offer a means to acquire the SeaStead slowly as they can afford. They do not offer an affordable model that allows poor people to transition to life on the high seas.

MULTI-LITHIC

The Seasteading prototypes all suffer from monolithic design thinking. They assume the floating base platform is monolithic in both the vertical and the horizontal sense. The all assume the base unit in a city is a City Block - which is approximately 300‘x300’. In order to optimize the design, it would help to focus on the base as a complex building block with many components and many sub-components. If these are layers are designed correctly, they could be assembled into City Block sized units or larger.

EFFICIENT SPACE

All the prototypes suffered from an extremely wasteful use of space. Streets, sidewalks, green spaces, even the roof tops of the structures were all wasteful. Dry horizontal surfaces on the ocean are the top dollar item. The water was not considered in any of their designs as something other than a place to avoid or isolate from. The SeaStead as envisioned by understand the complex building blocks for cities would have an extremely important role in day to day life. It would form boundaries between micro-scale uses. It would be the source of food, and it would allow for extremely efficient transportation.

HUMAN BEHAVIOR PATTERNS

Human behavior patterns are essence of life whether on land or on sea. The need to feed ourselves and find fresh water dominated primitive live. In modern life, much of our primitive functions and joys have been removed. Our population, as a whole is much more sick than it was in the good old days. SeaSteading is alluring because it provides freedom from dependency on corporate industrial lifestyles. It allows self-sufficiency, and with that comes a wholeness that is hard to achieve in the modern world. Understanding behavior as complex building patterns allows designers to better optimize their designs to allow for maximum expression of the basic human instincts.

NUMEROUS GOVERNMENT

The SeaStead Prototypes' greatest criticism is the high cost to construct would limit the number of SeaStead's created. The SeaStead's Institute goal is allow individuals to "vote with their boat", but they only offer massive Dubai "artificial island" style solutions. These expensive floating islands would have very strict and powerful governments. They would also offer few opportunities to vote with their boats. Detaching a city block sized "island" would appear practical, but in reality, its hard to see how they can be assembled in a manner that would allow individual platforms to detach.