Sy Omi Long

Sri Lanka is one of the wettest places in the world. Two monsoons hit yearly — the southwest monsoon between May and July and the northeast monsoon from October to January. Because of this, only three months of the year are left for the citizens to recover from the devastating aftermath of the yearly floods. Since Sri Lanka is hit with catastrophes nearly all year long, a safe refuge is necessary not only for the citizens of Sy Omi Long, but for people from within Sri Lanka as well. We want Sy Omi Long to be a place where Sri Lanka's island inhabitants will want to come when they have lost their homes due to floods or even financial emergency.

Today in the year of 2303, Sy Omi Long is famous for the unique design of our evacuation high-rises which have a remarkably close resemblance to a Chinese takeout box. In fact, we named our buildings C.T.O. which stands for Chinese Take Out. Imagine a Chinese takeout box and you will have a clear image of what the towers look like when they are in use. The only difference from your memory and our buildings is that our look as if we have stacked seven takeout boxes on top of each other, making the C.T.O tower stand six hundred and thirty feet tall. In one C.T.O section there are seven stories, making the total number of stories in one building, forty nine. There are a total of three hundred and twenty two apartments throughout the whole C.T.O high-rise complex.

The C.T.O. towers are made of carbon fiber composite material that is manufactured in a process developed by our Sy Omi Long Chemical Engineers. This process is made possible by the extraction of chlorophyll from local bamboo. The extracted chlorophyll is refined and used to make carbon fibers by using carbon dioxide gas from the air. These fibers are then woven into different composite materials that can be used for construction. The resulting material is light and stronger then steel which allowed our engineers to design the unique Chinese takeout box shape. An added bonus is that we can use this green technology to take pollution, or carbon dioxide, out of the air while creating no construction waste. This creates a cleaner environment for the residents of Sy Omi Long. In addition, the city of Sy Omi Long enjoys carbon credit financial gain from other countries for its development and use of this material. We chose to use carbon fiber composites for our building material because of its strength, versatility and negative carbon footprint. However, the sustainability of the carbon fiber composite material is a tradeoff for the versatility and economic benefits it provides. The C.T.O. towers have been designed by the best engineers and architects in Sy Omi Long to last ten to twenty years.

The first few C.T.O. sections we have reserved for the families with elderly or disabled members while the remainder sections can house a variety of families. All of the high-rises are located on high ground that is safe from flooding. Many of the inhabitants are pleased to notice an improvement in the style of living provided to them. The location of the buildings allows them to chose a style of life they prefer. A total of five C.T.O. towers are in Sy Omi Long, two on the outside of the city limits and three inside the city limits. The two C.T.O. high-rises that are outside the city limits are for people who wish

to live outside the city, just as they did before their homes were destroyed. These rural shelters maintain their vertical style to lessen their impact on the island habitats but provide outdoor living spaces for the inhabitants to use for gardens. The three towers inside the city are located between the commercial zone and the residential zone. These are for the evacuees that prefer a more urban way of life and they include restaurants, and fitness centers. Even though these people are evacuees, they are still provided with the full necessities of an average citizen of Sy Omi Long, such as easy transportation and full access to the city itself.

When we do not have a need to house evacuees in the C.T.O. buildings, sections of the building can be retracted in order to conserve energy sources. Below each C.T.O. building we have a basement which stores our hydraulic system, the S.O.L.H.S., or Sy Omi Long Hydraulic System. Water filled hydraulic pipes line the walls of the C.T.O sections when the towers are at their full height. When it is time to retract a C.T.O. section, the water holding up the top section will drain, allowing it to retract into the section below it. Inside the section of the C.T.O. below the top one, the interior walls will fold onto one another to allow room for the section above to fit inside. When the top section is finished retracting into the one underneath it, the hydraulic system will start to drain from the next C.T.O. section. The final result will be that the whole building will slowly retract into itself like a telescope. We use the hydraulic system to make sure that the whole process is controlled and safe. Since we have elevators inside our C.T.O. towers, when it comes time to retract these structures, we store our elevators inside the basement.

The Sy Omi Long C. T. O. towers provide hope for every Sri Lanka citizen that lives in a danger zone or has suffered from financial disaster. Sy Omi Long can provide them with a comfortable, temporary home in order to allow them time to regain their independence and return to their homes.

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Green Gardens-The City of the Future

Did you know about 500 to 1000 people die every day from pollution? That is one of the reasons Green Gardens chose to use green building materials and designs. In Green Gardens we want our residents to be in a stylish, affordable, and environmentally friendly community. We have hired the best engineers to help us build our honeycomb houses and bamboo buildings. We will now describe our designs, building materials, and why Green Gardens is the city of the future.

Honeycomb Homes

Green Gardens decided to create honeycomb homes. It has a hexagon shape which is a good structure against storms and wind. In the middle of every house there is a safe zone, which is underground and the residents can seek shelter there. The honeycomb houses are made from a bamboo structure. This material is stronger than steel and many other building materials. This helps the homes durability if a natural disaster should occur.

Another key feature is the rooftop gardens. They help our environment by increasing oxygen, reducing the carbon dioxide impact, neutralizing the acid rain effect and reducing air conditioning and heating costs. Rooftop garden residents are also in a seed-exchange program. They grow crops that can survive in our climate and trade with our neighboring cities. The rooftop gardens provide jobs because of the maintenance and seed exchange program.

Our demographic is low income families. Honeycomb houses, are inexpensive, ranging from $20,000-$30,000. It is more efficient with space because it is about 1,000 square feet. The rooms are smaller and we do not have wasteful space like larger homes. This accommodates families looking for homes that are affordable.

Our residential location is by businesses, malls and transportation stations. This helps provide jobs and entertainment for the residents of Green Gardens. Green Gardens is located in Pennsylvania by the Bulldog River, which has the City's modern shipping port. This helps the community get and send supplies to neighboring regions. The industrial sector is across the river, away from the residential sector, which reduces the pollution. Our bamboo farms also filter the air before it reaches the homes.

The honeycomb houses can be expanded by adding beds into a loft area or adding additional units. The houses can be reduced by removing a section of the hexagon shape then closing the section with mortar. The expected life of the houses is over 75 years because of the durable material we build with.

Building with Bamboo

Our innovation in materials and resources are the bamboo plants that have been genetically altered. After they are altered, they are large and strong enough to build with. It will be grown on local farms instead of factories. A bamboo building fits in the community because it has a low economical cost, sustainable material, and bamboo can be reused. Furthermore, bamboo can be used for more than just building material. The shoots can be eaten and fibers can be made into clothing.

The impact of our material on construction waste is that we are basically producers. We recycle and reuse everything. This has a big impact on a healthier environment. Bamboo is a strong and durable building product and it grows in a short amount of time. There are 1,100 species of bamboo with a few dozen being suitable for building. Bamboo can grow several feet a day and absorb four times as much carbon dioxide than other building material. This will make supplies environmentally friendly, easy to obtain and affordable.

Our material innovation is a good economic, efficient and sustainable choice because it is cheap, organic, and doesn't pollute. The tradeoffs that were made to accommodate this were the large pieces of land that are used to grow the genetically altered bamboo. The bamboo is a great replacement for trees because of its short growth cycle and high oxygen output. A grove of bamboo can release 35% more oxygen than the same amount of trees. Lastly, bamboo provides great erosion control, where other plants just wash away.

Our city will use bamboo for our houses, offices, shops, and other structures. We will build these structures using bamboo products rather than bricks, wood and other materials. The genetically altered bamboo is secured using bolted mortar at the joints. Bamboo comes in sizes from small to large, so we can use this to customize buildings. We used some species of bamboo for our water distribution system. The bamboo is joined together with recycled and organic material, which also helps our environment. Bamboo is a locally sourced product, it is recyclable and it is faster and cheaper than building with steel. Since it is made on a farm and not in a factory, our city has as low carbon foot print.

Green Garden Engineers

Engineers work on the electrical functions, water distribution, wastewater treatment, housing design and layout of Green Gardens. Some of the engineers also manage wireless communications with our neighboring regions and throughout the world. They also monitor how much money the city is spending, so we don't overspend. Our engineers work with our neighboring regions to teach them about our new technology and green building materials. This increases Green Garden's income and helps us remain the leader of green innovations. In Green Gardens, engineers help make new technology, new building materials and green resources to ensure Green Gardens live up to its name.

The Future

Green Gardens is an environmentally friendly place to live because it has a low carbon footprint, the design uses reusable products, and we grow our materials locally. It is good place to live for families, because the housing is affordable and the design is durable and safe. In Green Gardens the environment is our main concern. This is why we are always inventing and designing new green materials for our city. Now you can see why Green Gardens is the city for the future.

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Word Count: 991

No one wants to think about all the bad things in the world that could happen to them. The thing is, they still have to prepare for the worst. When disaster strikes, some may believe that the world will end for them and will have to be dislocated to refugee camps. However, this does not always have to be the case. Affordable but enticing living areas are possible. Plurimus Estriatus boasts both of these qualities while remaining a safe, environment-friendly city.

When refugees enter Plurimus Estriatus, they must apply for an apartment through the city. All above 16 submit a work resume and the city places them in a location pertaining to their skills. Because the bottom six floors are reserved for businesses, a chemist, for example, may be placed in a building with laboratories in it while one with a lower level or expertise may serve as a cashier. Rent is very low and financial assistance is offered to those who need it the most. The elderly and disabled will not need to worry and will be paid for by the city's spare money.

Living spaces called cubes are placed around the outer circumference of 300-foot diameter cylindrical-shaped skyscrapers built around the concept of micro-arcology. Arcology is a portmanteau of the words "architecture" and "ecology"; micro-arcology is creating an entire living environment within a small tower. Our building framework consists of recycled steel, which happens to be the world's most recycled metal. In addition, Over 95 percent of the water used in the process of making the steel is recycled as well. Key points on the structure are fabricated out of a strong titanium alloy. On ground level and on sidewalks/roads is where "Gigacrete" is used – a more environmentally friendly and cost-effective alternative to regular concrete and is easily sustained. Gigacrete will help to prevent the "heat-island" effect from happening to further give citizens fresher air.

Cubes have a modernistic feel and have a state-of-the-art design. Although only 8 feet by 16 feet in size (128 ft^2) and with a height of 10 feet, the cubes seems very spacious and have a very hotel like feel to them. Cubes are more modernistic in turn from traditional apartments or hotel rooms. The special characteristic about the "cubes" is that an acrylic glass "cube" is built around the bed, lined with multi-color LED lights. In each cube, there would be a queen-sized bed and a desk with a chair. An LCD television is positioned on the wall above the foot of the bed. A large closet near the entrance can accommodate up to an average sized family. In addition, there is a mini refrigerator in the room that can be used. In the bathroom, a water-efficient faucet rated at 1 gallon-per-minute is provided. Furthermore, there is a 1.6 liters-per-flush toilet (1 gallon-per-flush), an efficient shower head installed, and a cloth hand towel instead of paper towels to prevent paper waste.

In every cube, there is a large 6 feet by 8 feet window. A shade above the window incorporates efficient solar panels on its top side and can power all the electronic items used in the cube; excess energy is fed back into the grid. The window consists of three layers of glass with argon (an insulating gas) between the panels as well as a custom-made aluminum frame for increased thermal insulation. The glass utilizes a thin film of Huper Optik's Ceramic window film to deflect up to 70% of the sun's heat while blocking nearly all furniture-fading UV rays. Additionally, the glass is made out of RSi's 60% transparent photovoltaic-embedded glass. It can

produce roughly 36W from a 3 feet by 4 feet window in direct sunlight and can also be electronically frosted. Therefore, the window will range around 60% opaque to 99% opaque depending on the variable setting used by the owner. If energy generated is not sufficient, additional power is retrieved from the grid. Aluminum can be easily sustained and though this may not be the most cost-efficient at first, it pays for itself in 10-15 years. The walls are 12 inches thick and consist of acoustic silenced drywall; the drywall itself is ¼" thick. The space between the drywall sheets is filled with fire-resistant and acoustic-silencing foam.

Cubes can be customized with energy-efficient, environmentally friendly LED lights to modify the overall tone/style of the room. Lights can be changed for free if the existing light is not broken to make customization easy. Cubes may also be expanded via "suite-doors" which connect cubes together. Say for example that a man has a family of 5. Then he would rent out two "cubes" and expand them via suite-doors and order bunk beds to accommodate his family to the living space. Despite the fact that we are using very efficient and durable materials to construct these rooms, every 15-20 years, the cube is refurbished to maintain the healthy living environment that it once was. When refurbishing, everything that can be recycled is, and anything that cannot be is given to various "scrap-artists." Through this process, waste is reduced to a minimum. Nevertheless, the 2% of the waste that cannot be recycled is used in an incineration process with energy recovery. The CO_2 emitted from these incineration towers is captured before they escape from the smokestack and is redirected back into the ground to avoid global warming.

The ground floor of a skyscraper consists of vegetation-covered courtyards. Also on this floor are meals paid for by the city in the form of buffets. A column in the middle of the courtyard has eight elevators on it; each elevator serves three floors on the residential floors and one floor for the bottom six floors. Because the connections to this elevator are fire-proof and the elevator column can support itself, this elevator column also serves as a fire escape. A titanium staircase spirals around this column for even higher volumes of people.

The first six floors are rented out to business owners depending on the building type – office, high-tech, or shops/restaurants. (The city makes much of its money from the rent that these business owners pay)

On the residential floors, kitchens and laundry are available for use, the first two-to-four being handicap-only floors. Vending machines are placed on balconies looking down on the courtyard below. Hallways are 8' wide, carpeted, and circle around the center of the building. Every three floors, a ramp attaches to the central elevator column. Ramps are provided for access to these elevators from the balconies above/below the floor. Wi-Fi routers are placed every two floors at no extra charge to residents.

Each block contains four towers. Between these towers, a bus/taxi stop, subway, parks, and a parking lot for bikes, Segways™, and golf carts are located. Car parking lots have a high monthly fee to discourage use. These small courtyards can also include small restaurants and should be a very relaxing and peaceful social venue. Every two blocks, a "green-strip" is

allocated. Green-strips are where parks, city amenities, fire/police stations, and other recreational areas are placed.

Agricultural, manufacturing, and other plants are located separate from the skyscrapers. Because of this layout, commute should be brisk, for the city places the resident based on the field of work that the resident is most skilled in.

Heat islands are created by concrete trapping the sun's heat and making areas warmer. To deter the heat-island effect, the high specific heat capacity of water is used to remove heat from pavement. At the beginning of a block, water pipes branch out from the main 3' diameter water pipe positioned 10' underground into several 1" diameter hot water pipes positioned 1" under pavement. The cold water in these pipes then increase in temperature from contact with the hot concrete of the roads/sidewalks. These pipes directly feed into the buildings as a source of cost-efficient and solar-powered water heating. The water then is further heated if necessary in the buildings; altogether decreasing the amount of energy needed to heat the water. If more hot water is demanded than what is available in the hot water pipes, cold water is heated as well. At road intersections, the hot water pipe merges into a larger hot water pipe and compress thus heating the water even more. This pipe is then fed directly into buildings. At the next intersection, the process starts again. This process efficiently harnesses the sun's energy and suppresses heat islands all at once. In other words, it's Hydro-solar power with a good cause.

In our city, structural engineers play a very important role. Structural engineers design our buildings in a way in which they can last long and support their immense weights. They find a way to make skyscrapers more innovative and stand up to stronger forces. They find the best alloy to use so that strength and reliability is achieved. In the real world, structural engineers design everything from houses to skyscrapers to be sturdy and reliable. They incorporate technology into skyscrapers so that it will withstand to earthquakes. Another technology that we use is a system of concrete-and-plastic plate of concentric rings that encircle the foundation. The foam absorbs earthquake surface waves and/or primary waves of the earthquake. The damage done to the skyscrapers is reduced dramatically and will make them more durable to stronger earthquakes.

Buildings in Plurimus Estriatus ensure a healthy living environment. People deprived of all their physical belongings find a safe haven in our city. Our goal is this: to create happiness in humans by offering affordable but comfortable living areas.

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