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ABSTRACT

The desire to build and create a better community has been recently influenced by the rise of the automobile industry. To accommodate these machines, cities are designed to allow automobiles to navigate within the city in the most efficient and logical way, but the focus on human experience was not enough. With the increasing application of parametric software in the architecture and designing industry, we are able to design cities for humans not machines. Designing an urban area with human experience and feelings in mind will be crucial. One way to measure how people feel in a certain area includes on-site data collection to record different aspects of a city. By categorizing different qualities in the city, such as housing types, numbers of cafes or the height of buildings, and data from different social websites, we will be able to design a city that is truly based on human experience. An optimal parametric equation will be one that could apply to different kinds of cities around the world regardless of the sizes, culture or city patterns. By using tools such as GIS and Grasshopper and its plugins, we will be able to analyze a place with the data gathered on or off site and obtain a detailed conclusion of the targeted area.

OBJECTIVES OF SUPERILLAS

The Superillas is a group of community consists of nine blocks in Barcelona. The government decided to redevelop the nine blocks as a whole hoping to revitalize the space in between these blocks as well as to create a more sustainable means of movement, such as increasing the length of bike path networks and its safety; by doing so, noise and greenhouse gases produced by automobile can be reduced, the congestion problem can be solved too. The project also aims to promote biodiversity and open urban spaces by improving the condition of the streets and adding more green spaces, which can attract birds and living animals into this habitat. The priority usage of the roads will also shift from cars to pedestrian, developing new uses for the public to perform social connections with different blocks and nodes. The new planning strategy also aims to increase the social cohesion and complexity of the blocks by adding more local social facilities and encourage the public's involvement. As for the sustainability aspect, the super blocks also aim to reduce the usage of energy consumption through an improved design of lighting and energy distribution. The usage of solar radiation on site and the reuse of gray water and rainwater will be encouraged too.

To prove if these aims are met or if these objectives are working, an on-site analyze of the super block will be a way to find the answers. To measure, three indicators of social diversity are selected, they are 1) Land Uses, 2) Demographics and 3) Mobility Infrastructure. These indicators are further broken down into nine categories namely Social Space, Social Housing, Social Services, Jobs, Age, Income, Culture, Transit and IT. The unit will be one super block (9 city blocks). These indicators are measured on site using electronic devices. Points are added to the blocks beforehand; these points are 33m apart each other covering the three by three block. By recording the quality of the indicators

stated earlier, a total of about 33,000 data were recorded. Using visualization techniques and software such as GIS, Grasshopper, and Elk, these data are then presented in diagrams where they can be compared and contrasted with different super blocks. Different spatial diagrams such as the density of infrastructure facilities and servicing range can be shown too.

THE PLAN CERDA

The Super Blocks are made up of nine city blocks that are created in Plan Cerda. These blocks are part of the grid system that is laid out around the old city with a dimension of about 130 x 130 meters in an area of about 9 kilometers by 3 kilometers. The reason of the grid system is mostly because of the rise of automobile era and the need for hygiene purpose. These two objectives shaped this grid plan and was one of the most innovative and controversial of that time. Each block is being chamfered at the corners for better visual and traffic flow. The residential spaces are laid out at the perimeter of each block and the center will be left open to the public and social use. The perimeter structures can be placed at all four sides or only at two sides. The central spaces that are shared by the residential structure are extremely flexible – which is also what made this plan so successful – it is a customizable space that has its own microclimate.

With the spread of digital fabrication and higher technology, people can now enjoy products that are more truly based on their needs. In the past, mass production is the logic way to create products, even cities, since this is the most efficient way of production. But with the rise of technology, such as digital fabrication and the Internet, customized products and living style will be more affordable than ever. “The Internet fosters the relationship of millions of people who produce diverse

content and to customize both the time and product produced and how is exchanged other network nodes... promote the development of self-organized structures designed to self-sufficiency, able to create and improve quality of life and consume fewer resources.”(Gauillard). The blocks also promote the idea of customization and to create a village-style of living that supports itself. “Any building, neighborhood or city, should generate 100% of its energy on site through the introduction of sensors intergrade into the first buildings...”, “Internet teaches us the benefits of shared resources...”, “should encourage the enhancement of large tracts of fertile land located in the vicinity of large cities...” ,”manufacturing laboratories or Fab Labs are the new local factories, which encourage high-value economies and prevent millions of commuting.” (Gauillard)

FINDING SCALES

The choice of scale depends on the densities of indicators that we are recording as well as the quality that we aim to find. For example, if we want to find out the quantity of street telephones, a city block will be more suitable than only a single street; however, if we are focusing on the types of commercial buildings or the types of cars people are driving, a single street will be sufficient enough. If we want to analyze where people go to during their vacation, a larger area will be more suitable, since not everybody will go to other places during vacation, gathering more data will be more logical. However, if we want to find out where they are originally from, or what are their mother tongue, a smaller area will do the work since everybody must have a mother tongue or know where they are from. Besides, the toolkits for gathering data and analyzing should be able to adapt to different scales of targeted area by changing its targeted area and densities. i.e. the tools used in Los Angeles should also be used in Santa Cruz just by changing the number of blocks or areas studied.

In the project “The World’s Eye”, the study team analyzed images found on social websites, and use them to find out how tourists navigate the city and which countries’ citizens visited certain spots the most. In their study, they did their research on different scales. They focused on the cultural part of the city (part of the city where museums, exhibition halls or historical sites are concentrated) to find out which countries’ citizens are most interested in. If they want to find out how a visitor organizes his/her trip, then they will need to scale up the targeted area to the whole country in order to track which cities a visitor had visited (From Barcelona to Madrid then to Santiago etc). In both researches, they used the same toolkit (the tracking of images tagged and the photo’s EXIF data), but on different scales.

THE DETAILS

The first impression of a building will be the façade and the envelope of a building. People that are not familiar with the city will first be greeted by the appearance of a city, and it is also the appearance that shaped and molded the identity of a city, so the details within the envelope of a building will be important. In the 22@ district in Barcelona, buildings are being renovated, the government attempts to regenerate this district and form a new identity. Of course, the renovation of an area is not just to create a new façade for each building, the renovation of infrastructure is crucial as well. By focusing details on different infrastructures, such as transportation, technology, communication or recreational facilities, and keeping social equality and justice in mind, the lifestyle of the citizens will be improved, and only then the area can truly be regenerated. The usage of parametric tools could help design a city that takes human experience and different social details into account.

In the essay “Envelope” by Alejandro Zaera-Polo, he talks about the importance of envelope of a building. “If we look at the history and geography of building enclosures we find that their evolution reveals a sequence of stages where politics, climates, environments and ecosystems are embedded in the envelope’s technical capacities.” (Zaera-Polo) The skin of a building together with other complex variety of inputs reflects a city’s identity and represents its development progress.

PARAMETRIC TOOLS

Several parametric tools are used in the studying of Superilles. The small scaled places are divided into public and private sectors. Public areas include parks, open spaces, nodes at different intersection points. Private area includes third-spaces such as coffee shops, restaurants, community shops and community gardens within each block. By measuring the different quantities in these spaces, we can understand these places within the Superilles. These quantities could be noise levels, the cost of staying, the size of space, privacy or smells etc. By rating these quantities, combined with CSV, Grasshopper, Elk, and different visualization software, we can generate a visual diagram or spatial diagram that allows us to get a better understanding of these places.

CONCLUSIONS AND NEW IDEAS

There are a lot of aspects that affect a city’s social cohesion. The Internet is a large part of the current modern society, cities are driven by the connection of different people and sectors with the help of Internet. I am interested in analyzing the relationship of Internet and the development of a city. By measuring the quantity and quality of Wi-Fi hotspots, such as the number of Wi-Fi available, how

publicly available they are, how fast they are, how much they cost, how reliable they are, how secure they are, we can get a glimpse on how Internet impacts a city or the way around. Using parametric software such as Elk, Grasshopper, Rhino 3D, I could create visual diagrams that compare the urban development level in relation to the availability of Wi-Fi Hotspots.