Rise, Trends and Problems of Megacities: Civilizations Across Urbanization

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Abstract
Based on results of historical narrative analysis, this paper accentuates the dynamics and impact of urbanization to civilizations and particularly to the emergence of megacities in the major populated areas of the world. This study claims that megacities were born out of this massive urbanization. However, the same social phenomenon, the urbanization itself, also caused most of these megacities to experience various existing and continuing social, security, resource scarcity, and space problems at present. These problems differ depending on when these megacities were established and on how dense and fast the urbanization is taking place in the area. Despite this situation, megacities still lack concrete regulations, safety measures, and limitations on urbanization. This study utilized books, articles and various governments' census records and statistics on migration and urbanization.

Keywords: Megacities, Urbanization, Migration

Introduction

Megacity is a highly-urbanized area with at least 10 million inhabitants. It can be a single city or an agglomeration of two or more adjacent cities having borderless economic transactions and social mobility. It is characterized by high housing and population density of >2,000 people per square kilometer. It is nestled with skyscraper towers and homes a Chinatown District. Megacities emerge out of massive urbanization and suburbanization. The world's urban population is increasing at a rate of about 2.7% per year. World's urban population is increasing four times as fast as rural population (Levi and Schubel 2000). In 2007, for the first time in history, over half of the world's population or 3.3 billion people lived in urban areas (Mavropoulos 2008).

Through historical descriptive analysis, this paper points out the influence and impact of urbanization to the civilizations and to the emergence of megacities in the world. This paper accentuates how early cities emerge due to earlier forms of migration. In earlier civilizations, people moved to community centers for ceremonial purposes, commercial mobility, and protection. Between 4000 BC and 3000 BC the first cities, Uruk, Ur, and Lagash, built on the plains of Mesopotamia near and around the Tigris and Euphrates rivers became the sites of pilgrimage (Levi and Schubel 2000). And later, other cities that emerged in China, Pakistan and India, Egypt, Peru and Mesoamerica served predominantly as ceremonial centers having a size of only a town in the modern day. In Egypt, cities were inhabited by priests and craftsmen (Ponting 1993).

The construction of walls manifests one of the unique features of earliest cities. Through these walls, the city established protection against invasion while earning income from collection of taxes to goods entering the city gates. Within the walled city, networks of alleys and streets were also important for easier movement of people and goods towards the center where public buildings were located. At the center, rich people were living in expensive houses while the poorer population lived nearer the walls. People resided within the city walls for protection, economic opportunities, and access to public services (Ponting 1993).

In circa 5 BC, Rome became the first city to reach one million population (Levi and Schubel 2000). Other cities like Peking, Pataliputra, Athens, Venice and Genova had a growing population of around 800,000 in the same period. By 1000 AD, Europe's town count had risen to almost 3500 with average population of over 25,000. In around 1800AD, London had also reached one million population as effects of the industrial revolution. By 1900 AD, Britain's urban population rapidly increased turning one of five people living in London (Ponting 1993).

When the mass transport systems developed, many cities were created as people easily moved from rural to urban areas. By 1853, New York developed a 700 strong horse-drawn vehicle system after France introduced the horse-drawn omnibuses. This kind of public transport paved the way for the development of the railways. In 1863, London introduced the first underground railway which led to the growth of residential suburbs such as Camberwell, Hornsey, Kilburn, Ealing, and others. Several decades later, underground railways became functional in Boston (1897), Paris (1900), Berlin (1902), New York (1904), and in Tokyo (1920). The urbanization caused by the railways was massive. In Tokyo alone, the result was a trebling in population, from one to three million between 1920 and 1930 (Ponting 1993).

At the onset of 1950, there were already 83 cities in the world with populations exceeding one million (M1-Cities), accounting for 750 million people living in cities. Decades after that, cities in Asia and in Africa have been 'rocketing' their populations. For example, during 1950-1985, Lagos in Nigeria already increased its population into sixteen-fold. Hence in 1975, there were already 179 cities with one million population. In 2005, the figure had risen to more than four-hundred. In 2013, China alone already had 100 'Ml-Cities'. In 2008, 56% of the world's population or 4.4 billion inhabitants lived in cities (Auer 2008).

Rise of Megacities

Megacities are highly urbanized areas in which high degree industrialization also occurred. It is characterized by high housing and population densities (exceeding 2,000 inhabitants per km2) and a so-called periphery of high cost of living and high rate of property and land prices (Auer 2008). According to the United Nations, 'megacity' is a metropolitan area that has at least 10 million inhabitants. It is also called a metropolis as it plays an important commercial, cultural and political functions for its country.

Megacity is a product of a continuous urbanization. The sustained urban growth for a century of rural-urban in-migration and suburbanization has created the phenomenon of megacities (Levi and Schubel 2000). To reach the 10 million population threshold, a megacity can be a single metropolis or two or more metropolises that converged. This process of uniting a number of urban areas is called agglomeration. Boundaries of a city and the administrative district, therefore, are now only set arbitrarily, using only the functional boundaries at a certain juncture. For example, New York City with around 8 million inhabitants will not qualify as a megacity according to the United Nations definition, but if the entire New York-Newark agglomeration is assessed, it has more than 18 million inhabitants. Another example, Tokyo City is inhabited by some 8 million people but if we include urban agglomeration, it is home to over 35 million inhabitants. So, if we say 'megacity' what we refer is the entire agglomeration rather than the nominal city (Auer 2008).

Urbanization takes place as people search for better opportunities in the cities. These opportunities remain the reason why megacities continue to emerge today (Levi and Schubel 2000). Megacities are mostly located in key trading areas, for example, in the vicinities of rivers, bays and oceans. Thus, a megacity, due to its strategic location, provided a huge market, thereby promoting extensive trading, demands division of labor, and enables specialization of skills. City dwellers enable to specialize their skills and knowledge in production which gives them a higher salary in return (Auer 2008). According to the United Nations, "the larger the difference between urban and rural incomes, the faster the megacity expands and the faster the growth." Skills specialization and the manufacturing of goods via the division of labor does provide the financial strength of megacities (*Ibid.*). Public services and facilities are also more efficient in megacities. As they pioneered technological revolution and digitization of information, people tend to flock to the cities for specialized jobs, entertainment, education, and sports.

Forty years ago, there were only three urban agglomerations with over ten million inhabitants – Mexico City, New York, and Tokyo. Consequently, London started to decline its population in the 1960s (GlobeScan & MRC McLean Hazel 2008). Today, there are already 26 megacities in the world. London is included as a mature megacity though its population continues to decline. Osaka-Kobe in Japan is included as an urban agglomeration with an

estimated 20 million inhabitants (United Nations Department of Economics and Social Affairs 2014).

City	Country	2003 Population in Mio.	2015 Population in Mio.	Area in km2
Tokyo	Japan	35.0	36.2	13100
New York	USA	21.2	22.8	10768
Seoul-Incheon	South Korea	20.3	24.7	4400
Mexico City	Mexico	18.7	20.6	4600
Sao Paulo	Brasil	17.9	20.0	4800
Mumbai	India	17.4	22.6	4350
Los Angeles	USA	16.4	17.6	14000
Delhi	India	14.1	20.9	1500
Manila-Quezon	Philippines	13.9	16.8	2200
Calcutta	India	13.8	16.8	1400
Buenos Aires	Argentina	12.0	14.6	3900
Shanghai	China	12.8	12.7	1600
Jakarta	Indonesia	12.3	17.5	1600
Dhaka	Bangladesh	11.6	17.9	1500
Rio de Janeiro	Brasil	11.2	12.4	2400
Karachi	Pakistan	11.1	16.2	1200
Ruhr Area	Germany	11.1	11.1	9800
Cairo	Egypt	10.8	13.1	1400
Beijing	China	10.8	11.1	1400
Lagos	Nigeria	10.7	17.0	1100
Moscow	Russian Fed.	10.5	10.9	1100
Paris	France	9.8	10.0	2600
Istanbul	Turkey	9.4	11.3	2650
Chicago	USA	9.2	10.0	8000
London	Great Britain	7.6	7.6	1600

Table 1. The Megacities in the World (GlobeScan & MRC McLean Hazel 2008, 2016)

According to the United Nations, it is projected that by late 2020s, fourteen more megacities will be added to the list above which include: Tianjin, Guangzhou, Shenzhen, and Chongqing (China); Bangalore, and Chennai (India); Lahore (Pakistan); Tehran (Iran); Bangkok (Thailand); Bogota (Colombia); Lima (Peru); Kinshasa (Democratic Republic of Congo); and Greater Johannesburg Metropolitan (South Africa) (United Nations Department of Economics and Social Affairs, World Urban Prospects 2018).

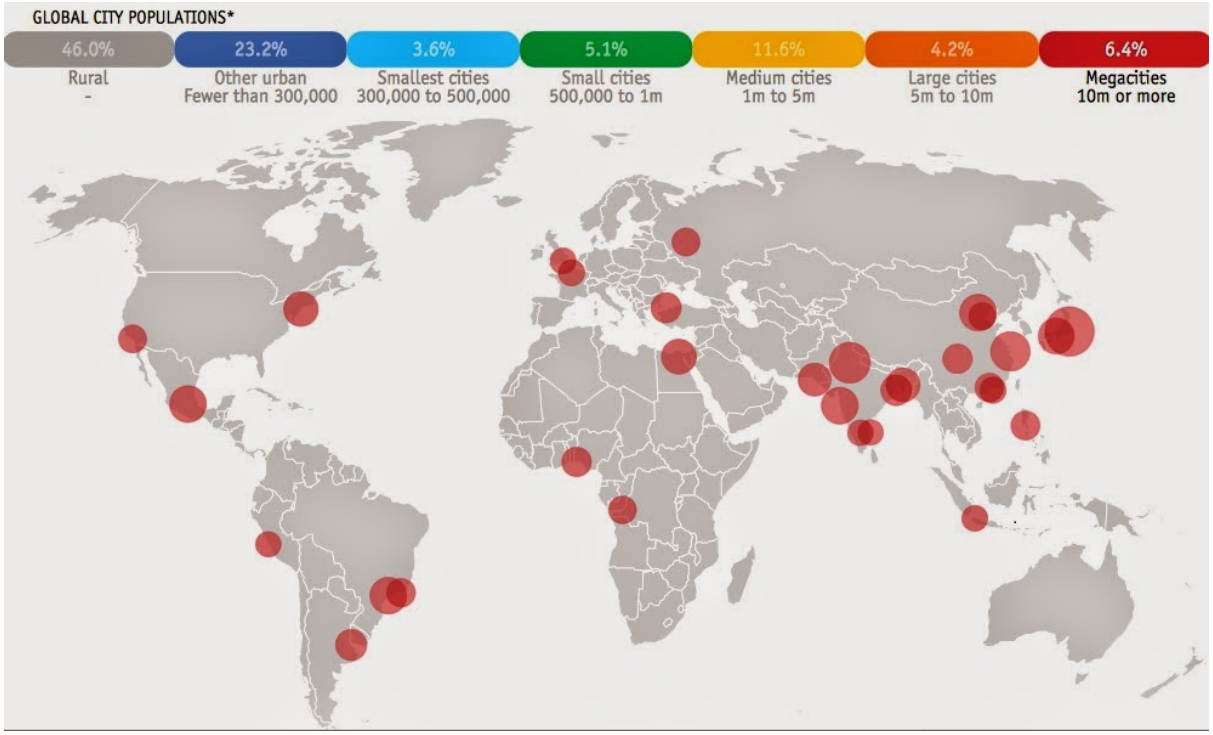

Figure 1: Map Locator of World Megacities (United Nations Department of Economics and Social Affairs, Population Division 2014)

Megacities' Problems

This paper claims that megacities were born out of this massive urbanization. However, the same social phenomenon, the urbanization itself, also caused most of these megacities to experience various existing and continuing problems in space, safety and security, scarcity, and services. Because of massive urbanization, megacities become overcrowded. There are too many people in a place which is beyond what is comfortable or normal. And when a megacity is overcrowded, it becomes hard for people to move, thereby creating congestion. Overcrowding and congestion makes space a big problem and a necessity in megacities. City dwellers quality of life degrade as they fight against growing competition in space mobility and resources. Centers of megacities where best infrastructure services are available become limited for the rich people.

Because of overcrowding and space congestion, urban land prices became very prohibitively high. As megacities run out of space, higher real estate property prices ensued. This turned the low-income population more prone to homelessness. Hence, slums and shanties emerged especially at the fringes (GlobeScan and MRC McLean Hazel 2008).

Another problem arising due to overcrowding is the inadequacy of transportation infrastructure. The quality of transportation infrastructure in megacities rapidly degrade as it accommodates huge mass of people and their everyday socio-economic activities beyond those infrastructure capacities. As overcrowding intensifies, transporting of goods and travelling of people demands higher financial costs and incurs more wasted time. The stress city dwellers experience in traffic jams on daily basis takes a toll on their health (Luoma, et. al. 2010).

As overcrowding in megacities also caused higher energy consumption. High power use and demands from households and industries in megacities pose a serious threat to human health and ecosystems. Extensive energy use correlates with pollution and environmental destruction. Landforms and water resources are destroyed because of careless disposal of effluents and solid wastes. Rapid increasing demands for electricity also triggered unexpectedly high utility prices, making the poorer population to no longer afford it (GlobeScan & MRC McLean Hazel 2008).

Moreover, healthcare services become limited comparing the bulk population needing medical assistance. The city governments face a higher financial burden in providing healthcare services to the poor masses. Due to inadequate budget in health, the efficiency and quality of medical services in megacities becomes compromised and limited. Hence, healthcare services, facility and workers quality continue to fluctuate and degrade (*Ibid.*; WHO 2010).

In addition, the maintenance for safety & security becomes a big challenge in megacities. Organized crimes rose as one of the biggest problems particularly in emerging and transitional megacities. Terrorism placed as a second threat to megacities mostly in mature megacities. These crimes are triggered due to poverty and drug-influenced-activities (GlobeScan & MRC McLean Hazel 2008).

Shortage in water supply, on the other hand, is one of the alarming problems in megacities today. Because of the rapid demand, continuous use and wider scope for distribution, water becomes an expensive commodity in megacities. Water supply distribution services majorly accommodates the megacity center where industries and rich residential areas are located. Slums in fringes are served only by communal faucets or limited water line connections (Ricci, et; al. 2000).

Megacities' Trends and Solutions

Solutions to those megacities' problems become a world trend today. In space congestion, megacities governments addressed the construction of high- rise buildings as the practical and efficient answer to save space and at least accommodate the booming population. The development of high-rise buildings in both residential and commercial purposes is a trending solution to space problems in megacities. Hong Kong, for example, already had roughly 7,500 tall buildings with at least 12-storey built; in New York there are about 5,500 buildings; while Sao Paolo already had 3,000 high-rise buildings; and Shanghai with 550 buildings already built and 300 under construction (Earth Science for Society, 2008) The underground space is also a substitute for surface space for public and commercial use (FIG 2010).

In overcrowding and transportation problem, the use of mass transit system like metro trains and public buses are recommended by the city experts. The proliferation of private cars could further intensify the transportation infrastructure problems. Cars occupy a lot of space causing traffic congestions. Hence, public transport vehicles are suitable for the conditions of transportation infrastructure in most megacities today. Not only that they save space but also that they sustain the quality and the capacity of the transport infrastructures in a longer period (Luoma, et. al. 2010).

For health, common healthcare systems fit the capacity and demand needed by the bulk population. Experts point out the automation of government healthcare insurance and services to be one of the priorities the megacity government should focus. Health personnel workers should extend the use of automated healthcare systems especially on patients' admission records where healthcare institutions can attend to the needs of their clientele and provide much faster, inclusive, and efficient healthcare services. Of course, more funding is needed to sustain quality and efficient healthcare systems in the post-pandemic period (WHO 2010).

Moreover, the use of renewable energy is also trending worldwide. Environmentalist agreed that this kind of change would truly lead megacities into greener progress. For example, Germany government has been spending a lot of money for the use of solar energy nationally. Despite the risk of bankruptcy and compromise for social and infrastructure services, Germany pushed the decision to shift to renewable energy. The energy transition goals of the German government emphasized decarbonization and the decrease in energy demand through cheaper and efficient renewable energy as primary source of energy (Valand 2021).

Another trending solution to megacities' crime problems is the installation of a twenty-four-hour security program to monitor crimes and misbehaviors. The installation of CCTV (Close Circuit Television) to public establishments, roads and even to every residential house to monitor crimes is seen as a viable solution to safety and security related problems in megacities. Digital technologies like CCTV and other micro cameras can be easily accessed and purchased for public surveillance purposes. Through this, the effort to secure the city twenty-four hours has been made easy, effective and at least stable. CCTV answers go beyond anonymity issues since criminal's identity can be recorded through the cameras (GlobeScan & MRC McLean Hazel 2008).

In water issues, megacity experts addressed water treatment and water reuse for the optimization of the limited water supply. Water treatment facility should be upgraded. And the construction of modern water reuse facility should be funded. Leaking pipes and other outdated facilities should be replaced in order to save water supply. Water line connections should be improved in order to provide a wider distribution of water supply especially towards the suburbs and slum areas (Ricci, et. al. 2000).

Conclusions

Urbanization happens as people move from rural areas to cities in search of a sustainable income and diverse opportunities. The constant urbanization created the megacities. This social phenomenon, the emergence of megacities out of massive urbanization and suburbanization, in turn created another social milieu. The megacities' mainstreamed culture established advance technology systems, digitization of information, higher income, diversified opportunities, more demand for specialization of skills and knowledge, and inclusive automated governance. Along this growth and new trends, various problems exist within megacities' settings like pollution and environment destruction, congestion, overcrowding, higher crime rates, poverty, and health risks due to communicable diseases and extensive energy consumption. These problems will continue to threaten megacities survivability if urbanization remains unregulated. Bigger population means greater demands. But megacities' resources are limited. Because of the stiffer competition in space, mobility and resources in megacities today, the health and the quality of life of the city dwellers continually decline. It is megacities' people's non-negotiable responsibility to take actions

and forward precautionary measures and concrete solutions to attain sustainable megacities in the future.

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