RESILIENT CITIES*

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In 2014, the ISPER organized an International Seminar on 'Immortal Cities'. The underlying idea of the theme was that there is something magical in certain sites that the same city has a tendency to assume successive avatars on the same site even if devastated or destroyed at an occasion. One may find out the dynamics of such a phenomenon and apply this learning for ensuring the sustainability of cities. My own observation to this effect was that cities may not be immortal but their names are. Name is the essence of existence. The city names have their own tales to tell and messages to convey about their destiny (Krishan, 2014).

Indeed, the branding of cities in quick succession has been a regular practice now for over a century. This has been in response to an accelerated pace of the urbanization process and the pivotal role which cities are playing in the context of evolving situations. The trend was set in motion in 1898 by Ebenezer Howard who propounded the idiom of **Garden City** as a response to the maladies of an industrial city. Such a city would have a garden as its nucleus and a green belt on its periphery. He visualized matrimony between town and countryside. Out of this joyous union, he expected the birth of new hope, new life, and a new civilization. Evidently, his emphasis was upon aesthetics of cities.

After World War II, the discourse on **Dynamic Cities** remained in fashion for a long time. Dynamism of a city was referred to its capacity to attract investment so as to generate additional employment, facilitate a rise in wage level, and strengthen the financial base of the local bodies for providing better services. In the spirit and style of marketing themselves, several cities brought out elegant brochures to highlight as to why they are the best places for a rewarding investment.

By 1987, it was realized that design and dynamism of cities alone would not do. Health is most critical to human life. Hence, we need nurturing and nourishing **Healthy Cities**. A healthy city is one which caters to the physiological, psychological and spiritual imperatives of people. To create such conditions, they have to empathise with each other, cooperate and work together.

Soon after in 1990, the focus found a new ideal in **Sustainable Cities**. Such places were to meet certain basic conditions. The specified ones were that achievements in social, economic and physical spheres are to be enduring, natural resources are to remain in lasting supply to accommodate future development needs, and environmental hazards are to be pre-empted and promptly managed. Above all, local governance is to be on sound footing for ensuring functioning of the city.

In 2008, the attention got diverted to the idea of **Harmonious Cities**. The argument put forward was that the construct of sustainable

cities is grounded largely in ecological and ethical considerations whereas the need is to synchronize both natural and human resources. Harmony as a concept relies on the tenets of mutual support, solidarity and collaboration. In line with such thinking, a harmonious city is concerned with ensuring integration in three key areas; spatial, social and environmental.

More recently in 2012, the city branding has taken the form of **Prosperous Cities**. The overall quality of life in a city depends upon the bounty of its wealth. In its own turn, the acquisition of prosperity is a function of five factors: productivity, infrastructure, quality of life, equity and environmental sustainability. That sets the agenda for any city aspiring to be affluent.

The state-of-art expression emerged as **Great Cities** in 2014. Such places are the ones which provide best of opportunities for growth and self-actualization to everyone, where quality of living is of high order, and whose environment is green, clean and healthy. All this is to be ensured on a sustained basis. The governance of such cities is well-versed in management of change and encourages a grand and great civic life.

An expression afloat today is **Smart Cities**. A smart city promises a vibrant, efficient and rewarding milieu with the help of technology. It carries a flavor of modernity, of high quality infrastructure, and a comfortable daily living.

Not to miss by way of diversion is the concept of **Unknown City**. This represents the gap between what city planners intended to achieve and what got actually manifest on the ground. The distance between the desirable and feasible gets revealed. Such realizations have to be factored in while working for resilience of any city.

The Idea of Resilient City

The latest expression in vogue in the present context is **Resilient City**. A resilient city is the one which has a capacity to survive, adapt and grow in face of chronic systemic stresses and acute sudden shocks. Such situations may arise from haphazard city growth, infrastructure deficit, economic downturn, environmental degradation, epidemic break-out, and so on. To withstand these, the city has to acquire buoyancy to manage any vulnerability through integrated development planning. Here the need would be to learn from past experiences to take decisions for future, adopt effective strategies to achieve cherished goals, develop robust management system to meet any challenge and ensure salience or a spirit of involvement among masses. Technology has to be handmaid of all this process.

The current idea of resilient cities is in response to the evolving scenario of climate change. Cities are assessed as being more vulnerable to extremes of weather phenomena which have become recurrent of recent. Urban floods are a regular event, heat waves are more frequent and intense than before, and sea level is rising as a constant threat to the very existence of several coastal cities.

The World Bank brought out a primer on climate change and imperative of resilience of cities in 2008. Subsequently in 2013, the Rockefeller foundation came up with its initiative on resilient cities with a focus on 32 cities. By now, 100 cities have been adopted under the programme. The stated objective is to build capacity of cities for coping up with their physical hazards, such as flooding; economic concerns, like employment losses; social upheavals, in the nature of chronic violence; and infrastructure inadequacies, manifest in overcrowded transport system, electricity failures, and water shortages.

Bengaluru (8.5 million), Chennai (8.7 million), Jaipur (3.1 million), Pune (5.1 million) and Surat (4.6 million) are the five cities of India which have been covered under the Rockefeller Foundation Programme. Each of these suffers from several common and some specific problems pertinent to the resilience issue. Frequent traffic jams plague Bengaluru. The city is not without its water woes. Seasonal monsoon flooding is an equally dreadful experience. Chennai is a strange story. Floods and droughts alternate in this coastal city. Tropical storms are frequent and tsunami of 2004 is still afresh in the memory of people. Most critical are the problems of slum localities, especially those neighboring the sea. Jaipur is trying to cope with its transportation scene worsening every day. Infectious diseases make a heyday due to inefficient sanitation system. The pace of infrastructural augmentation is far too slower than the rate of its population growth. Traffic jams are rather more frequent and long-range in Pune. The city has an insufficient and aging bus fleet which is the major mode of intracity mobility. It is the sixth most earthquake prime city of India. Surat finds itself in the list of most climate change affected cities of the world, according to the World Bank Sustainable Development Network. During the last 100 years, it was witness to 23 floods, including the deluge of 2013. Most worrisome is its problem of water borne and solid waste linked diseases, of which the plague of 1994 is a grim reminder. Among the five climate resilient cities of India, Surat is the first and only one to have a plan to this effect.

Evidently each city has own unhappy part of its story. Hence, the resilience strategies have to be specific in each case. The same goes for cities in other countries of the world covered under the Programme. Some select cases are described below.

The Hurricane Sandy of 2012 awakened New York to the need of having a resilience plan. The coastal surges and inland flooding of low lying areas created a crisis situation. Any strategy to pre-empt such devastating event in future has to give due consideration to climate change as a potent factor. Hence new ecological and landscape designs are to be contemplated for the city.

Moscow is facing the aging problem of prefabricated, multi-storeyed, thousands of flatted-blocks raised during the socialist era. Climate change is worsening their condition. Huge demolition of these residential units and resettlement of 1.6 million people is an urgent task. The resilience strategy demands construction of thousands of new residential localities equipped with necessary infrastructure and services.

Singapore is coming into grips with the problem of aging population while Moscow is testing its resilience vis-à-vis aging housing. An aversion to the state subsidisation and a recent policy to tighten foreign worker intake are impelling the city elderly to continue with their jobs for longer years. They have to accept even physically demanding jobs like cleaning, machine operations and assembling. Retirement age has been raised from 60 to 67 years. Meanwhile, this island city is also prone to coastal flooding, occasional droughts, and pollution of air caused by fires in neighbouring countries. The question of resilience here assumes a multi-faceted complexion.

Nearby Jakarta is sinking at an estimated rate of a quarter meter a year. The city does not have enough of water supply, and residents are impelled to extract water from shallow aquifers. Often the land above collapses, a phenomenon rare in other cities of the world. Hence, floods here have become most devastating.

Paris is said to be in the vanguard of city

resilience movement. It is no less prone to challenges posed by climate change resulting in floods and heat waves. Rapid urbanization is making a call for regular upgradation of infrastructure base. The impact of globalization is manifest in rising multi-ethnicity with its own attendant problems. At the moment, the city is according the highest priority to its vulnerability to climate change.

Evidently, the diagnosis is the first step for promoting resilience of a city. The key factor responsible for its maladies is to be identified. For the present it has been circled on climate change.

Forerunners of the Idea

The concept of resilient cities did exist earlier as well. It was in response to the urban development problems as these emerged after the World War II. The war had caused destruction of several cities, dislocations of population on a large scale, and massive influx of people in cities. Cities in Europe were most affected, may it be London, Paris, Copenhagen, Stockholm, or Randstad. The challenge arising from housing shortage, traffic congestion, inadequate public services, and increasing pollution of air and water was common (Hall, 1974). Which strategy was adopted in each case? What was the outcome? Which lessons do we have for building city resilience?

The strategies differed. For example, the way to decongest London was found in raising a number of new towns in its proximity coupled with strict zoning of green belts in their intervening areas. The plan for the Paris Basin favored the construction of eight new towns along the two parallel belts to the east and the west of the city. In addition, balancing metropolises or counter-magnets were also raised elsewhere in the country. In Copenhagen, efforts were directed towards increasing the accessibility of the central city by providing higher speed suburban transport, along with planned extensions of the finger routes to accommodate further growth. Stockholm decided to confine its future growth around new railway stations planned on underground suburban rail routes radiating out from the city centre. A variant was offered by the strategy adopted by Netherlands. It opted for a concentrated deconcentration. Its Randstad takes the form of a 180 kilometres long crescent. Along it are located a number of cities or towns, each with specific functions. Amsterdam, Rotterdam and Hague mark the biggest concentrations: the government is concentrated in the Hague; the port, wholesale activity and heavy industry in Rotterdam; and finance, retailing, tourism and culture in Amsterdam. It is a polycentric metropolis as a whole.

It follows that European cities adopted different strategies toward resilience. The London situation was tackled through decentralization at the local levels. In the case of Paris, decentralization was sought at the regional and national level. Copenhagen and Stockholm opted for convergence by increasing accessibility to the central city. Randstad, by comparison, found virtue in combining concentration and decentralization. Each city paved its own path of resilience.

Curitiba: A Success Story of City Resilience

Among the cities of world, Curitiba, the capital of Parana state in Brazil, offers a grand story in theory and practice of a resilient city. Covering an area of 431 km^2, it recorded a population of 1.9 million in 2015. The city was honored with Global Sustainable City Award in 2010 in recognition of its innovative transport system, superb land use management, and exceptional environmental care. Earlier in 1990, Curitiba had received the United Nations

Environment Programme Award for its very successful waste management projects (Robinovitch, 1992).

The key features of Curitiba's development plans included the physical spread of the city along five linear axes, each having an express busway in the middle; transformation of the city centre into a pedestrian zone; and preservation of cultural heritage. A public competition was organized in 1965 by way of inviting comprehensive plans for the city. The Curitiba Research and Urban Planning Institute was also set up to prepare a master plan based upon the winning entry. Jaime Lerner, who subsequently served three terms as the mayor of the city, was appointed as its director to finalize this. Adopted in 1968, and started in 1974, the plan became fully operational by 1991.

To facilitate the public transport system, centered on the bus, urban growth was encouraged along the main axial roads radiating out from the city centre. The middle lane of each axis was reserved exclusively for plying of express buses. One block away from this lane on the both sides were two high capacity free flowing one way roads meant respectively for in-and-out traffic? Buses operating under the system were privately owned. One single fare was fixed for all buses, irrespective of the distance travelled. No subsidy was granted.

The city acquired fame also for its two city sanitation progammes. 'Garbage that is not Garbage' and 'Garbage Exchange'. Under the first progarmme, the citizens were asked to organize their domestic garbage in two separate bins, one for the organic and other for inorganic. This facilitates their easy collection and proper recycling. People also get involved in the process. Under the second programme, the slum dwellers were induced to sell their garbage in return for bus tickets, dairy items,

and agricultural products. Such a measure also prevented dumping of garbage in the river, valley bottom and nearby forest. The strategy proved a great success.

The system of sewage treatment was equally imaginative. A chain of lagoons close to the river in the city was interlinked for successive steps involved in treatment. The initial lagoons were used for breaking the micro-organisms in the sewage; the second ones for oxygen processing of the material transferred; and the final ones to treat it fully and discharge into the river.

Most impressive were the measures adopted for preservation of the city's cultural heritage. The oldest surviving house of the city was identified and turned into a documentation and publication centre. A former iron foundry found its reincarnation as a glittering shopping mall. The abandoned gunpowder depot was turned into a theater; a stone query became an open air theater; the old building of army headquarters got converted into a cultural foundation; and an abandoned railway station became a railway museum. A twenty four hour commercial street was laid out in the city centre. The municipal authorities encouraged the renewal and conversion of old buildings, with a condition that their facade be maintained.

Meanwhile laying out of parks and conservation of forested spaces was not forgotten. Parks had artificial lakes within as a flood control device. Old city buses were overhauled and painted green. These were meant to provide free bus service to recreational sites in the city on week end.

The old city buses were also remodeled into mobile training units. These were deployed daily for giving skill formation courses in slum localities. Hair styling, machine repairing, word processing, carpentry and tailoring were among the training items. A 'Free Open

University for the Environment' was also instituted to generate environmental awareness among journalists, taxi drivers and baby sitters, in particular. The school children were trained in environmental education through leaf family technique, wherein they were dressed up as trees or leaves in public or in media.

There cannot be more enlightening and emulative story of city resilience than that of Curitiba. It has several messages to offer. The foremost is that there is no substitute for imagination to have a future vision of the city based on past experiences, prevailing conditions and emerging scenario. For this, it is necessary to understand the city in terms of not only its visible structures but also hidden flow of daily life. Here emerges the role of pertinent research which is to form the basis of an action script for every issue. An efficient public transport system emerges as a solution to city problems, particularly those related to intra-and inter-city mobility, land use configuration, environment care, and heritage preservation. The Curitiba experience suggests that the destiny of a resilient city is best placed in the hands of the person who is professional by training, has faith in research based decision making, and is bestowed with necessary powers to implement what is best in the interest of the city. Perhaps cloning of Jaime Lerner is an answer to such an imperative. His visionary literacy work, *Urban Acupuncture*, celebrating projects, people, and success stories and emphasizing the need of pressing on the vulnerable points of city on priority, is likely to be a new Bible for any city.

References

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