



ABSTRACT

This article explores the dynamic relationship between human and city systems, emphasising the need for holistic urban planning to ensure cities remain sustainable and resilient.

It advocates for a comprehensive approach that views urban systems as interconnected and interdependent, incorporating diverse contextual perspectives on future city development and redevelopment.

While future urban planning faces unique challenges within specific local contexts, addressing these hurdles requires a focus on the underlying causes and narratives within those contexts, while considering the interconnected factors that can expose cities to risk and undermine their functionality.

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UNDERSTANDING THE INTERPLAY BETWEEN HUMAN AND CITY SYSTEMS FOR FUTURE CITY PLANNING

by **Ahmad Farhan Roslan**

The *degree of urbanisation classification*^{1,2} defines cities as settlements with at least 50,000 inhabitants in contiguous dense grid cells, or 1,500 inhabitants per km². Some national definitions of cities include other indicators such as built-up areas, population density thresholds, employment, infrastructure or services³. Malaysian cities have the following definitions:

*"The gazetted area and the contiguous built-up area and the combination of these two areas have a population of 10,000 or more; or special development area; or district administrative centre even if the population is less than 10,000 people and at least 60% of the population aged 15 years and above are engaged in non-agricultural activities."*⁴

Cities are innovative places with enormous potential to drive transformational agendas such as climate goals, digital transformation, and economic growth. Cities have played an important role in many aspects of modern history and global development. They promote economic growth, encourage innovation, and provide access to amenities and services such as housing, and transportation.

History demonstrates how cities in historic regions such as Mesopotamia (around 7500 BCE) and cities along the Nile River in Egypt⁵ became important in human civilisation when

they served as trade centres, centres of governance, and cultural and education hubs. Cities underwent significant changes during the Industrial Revolution in the 18th and 19th centuries as science and technology advanced.

Urbanisation has changed and evolved economies and cultures, as seen by how industrialisation has transformed some cities into new spatial arrangements and increased the use of natural resources. For instance, the economic base of pre-industrial Penang transformed from agricultural and forest products towards port trading as the new engines of power promoted urban growth⁶. Lodz, a city in central Poland, is another example of how industrialisation changed an agricultural town into the biggest textile production in Europe⁷. In these instances, industrialisation positively created more employment and transformed how cities were designed. Interactions between city elements also increased, creating transportation, human settlement, and economic activities.

However, history also shows how various factors, such as trade routes or economic activity shifts, can cause cities to lose their ability to function.

In the 90s, Lodz was severely affected by the decline in textile production and the lack of new investments⁷. It not only affected the local economy but also caused urban decay

and loss of identity. This is not surprising since economic variables have been discovered to be powerful predictors of both dispersion forces (which cause de-concentration) and agglomeration (which is the concentration of population and economic activity) in a city⁸.

Given that cities encounter issues that go beyond economic considerations, such as social, health, environmental, and infrastructural-related, more research may be necessary to fully understand how non-economic elements impact the identity and function of cities. Furthermore, each of the factors mentioned interacts, possibly creating lasting domino effects if not adequately addressed.

Lesson Learnt from the COVID-19 Case: The City is a Complex System with Interconnected Factors

The COVID-19 pandemic had a major impact on social interactions, economic stability, and public health systems, which affected municipal systems. Due to dense city populations, it was not surprising that COVID-19 cases surged drastically in city centres, spreading and overwhelming the city's healthcare system. Partial and total lockdown orders were implemented in several major cities with high populations as a desperate control measure, causing economic disruption by forcing businesses to close, resulting in widespread job losses and financial strain. Additionally, businesses could not function efficiently due to disruptions in the supply chain for goods and services, making it more difficult to maintain the economy. These incidents highlight the ways in which interrelated elements jeopardise cities' ability to function and expose them to contagion risk.

The epidemic made clear the vulnerability of urban systems and the possible loss of municipal functions. Considering

urban systems as intricately linked and interdependent draws attention to the necessity of reconsidering our present approach to urban planning and reconstruction. As a result, it is now even more important to address these elements in city planning and policymaking by incorporating various contextual viewpoints and narratives. The question now is not whether variables influence our cities' functionality but rather how they do so:

Do we have an in-depth understanding of urban challenges and characteristics of future cities that will keep them sustainable and resilient?

Do we have adequate information or evidence that assist decision-makers and city planners shape cities that serve all strata of society?

Future Urbanisation Challenges in Malaysia

The issues of urbanisation in the future are complex and evolving quickly. Urban studies scholars and city officials are discussing interrelated topics, including transportation, health and the ageing population, the environment, climate change, and even inequality in wealth and income. Specifically, cities in Malaysia are facing challenges, including urban sprawl, traffic congestion, poor urban mobility, lack of sufficient and affordable housing, and environmental issues such as flash floods and waste management⁹⁻¹¹. However, resolving these issues necessitates addressing the local context-specific root causes of each issue. Due to these various contexts and features, every metropolitan area has distinct needs and diverse priorities.

"When no single solution fits all, localisation is the key."

Previous work done by Somasundram et al. (2018)¹² to better understand the challenges that city dwellers face in KL, Selangor, Melaka, and Penang shows several challenges and areas of concern. While most challenges confronting cities are related to crime and rising prices, the study revealed that

other factors are comparable, such as Selangor and Melaka struggling with employment opportunities, Penang with income inequality, and KL with traffic congestion.

However, each city brings different issues, and the question of why such issues persist in these cities has not been adequately addressed, necessitating a more in-depth understanding of the city dwellers' narrative. It is also essential to understand city dwellers' different compositions and profiles, as each group faces different challenges and will influence how our future cities are developed or redeveloped. Stakeholders at the local level, including formal (e.g., government agencies, city councils, and municipalities) and informal actors (e.g., NGOs, civil society, and scientific organisations or think tanks like Penang Institute), could play critical roles in addressing local issues and driving the local transformation agenda.

"Understanding the different needs of different groups is challenging. Managing it and making it inclusive to all is another challenge."

Taking the intergenerational^{13,14} discussion in urban design as an example, there is a significant gap in understanding the various needs and how they intersect to create “cities for all”. With ageing communities in Malaysia projected to increase to 19.8% in 2040¹⁵, several initiatives have been emphasised on designing “Age-friendly Cities and Communities”. The City Council of Penang Island (MBPP), for example, came up with an age-friendly strategic action plan¹⁶ promoting active ageing or lifestyle with design considerations to ensure city elements such as housing, transportation, outdoor spaces, and buildings are inclusive, accessible, and safe for older adults.

This active ageing fosters social inclusion and cohesion, where older adults can interact and engage with different age groups, improving their health, happiness, and well-being. However, child-friendly, youth, and disabled person spaces, which should be connected, remain siloed. Moreover, some of their needs and experiences are not adequately understood to make the urban space more connected and inclusive for everyone. There is a need to investigate how existing policy,

planning, and design strategies can adequately address all these needs through open and transparent discussions.

“Past policy has shaped our existing cities. But it’s a human-centric approach that will drive part of the transformation agenda for the future.”

The abovementioned approach demonstrates how human experience and needs are central to more human-centred urban design. Societies become part of important aspects of decision-making by enabling them to envision and shape desired outcomes.

However, if we look into the past, we can see how previous policies shaped our cities. Congestion, for example, is one of our major issues as a result of ineffective urban planning and policies¹⁷. Previously, policies were designed with a focus on road expansion and a high reliance on private vehicles. Since 1979, more road networks have rapidly expanded (26 lists of highways/expressways in Greater Kuala Lumpur¹⁸), with several projects underway or planned for the coming years.

Figure 1: The highway is now built vertically on top of the existing roadway



Photo by the author, December 2024

The fact that we must accept urban sprawl is one reason why more road networks have been built. However, this approach has exacerbated congestion problems. Urban sprawl in Malaysia happened between the 70s and 80s as a result of unfettered economic and poverty reduction efforts that successfully improved people’s economy¹⁹. More people move to cities during this time for better pay and job opportunities. As a result, urban development becomes more concentrated, raising living costs and increasing demand for housing in cities. This adversely affects housing prices (due to high land prices in the city core) and pushes people to seek affordable housing further away from city centres.

Today, there is a greater emphasis on promoting alternative modes of transportation and reducing reliance on private vehicles. But if this is the case, do we really understand how people get from one place to another in the first place? What factors influence their transportation choices? If a mother with two children must send her children to school on her way to work, do we consider her needs when designing the city’s transport system? Is public transport still viable in her situation? Multiple user experiences and scenarios may contain useful information for shaping the transportation solution.

The Way Forward in Shaping City Planning

This article provides an overview of the broad emerging themes to consider when planning future city development or redevelopment. Several points explained above provide the foundation of our recommendations in this section.

“Understanding the factors and the city system.”

The first section of this paper elaborated on how cities have progressed in the past, with economic factors playing a significant role. It is important to understand how economic factors have influenced city development and how they shape city growth over time. However, future urban challenges present a more complex scenario, requiring future cities to consider factors beyond economics and how they impact their ability to function. After all, we have established how cities form “complex systems” of interacting factors^{20, 21}. Because different cities have their own set of characteristics, how each of these factors influences the city’s function may differ from one another.

Understanding how cities continue to function in the face of climate impact requires understanding a desirable feature of the urban system. Flooding, for example, causes disruptions in transportation networks, power grids, and communication systems. This indirectly impacts how we communicate and commute, as some areas may become severely disconnected from essential services. With most major road networks becoming inundated and disconnected as a result of flooding, rescue and relief efforts will become more challenging, potentially resulting in loss of life and livelihoods.

Figure 2: With communication lines cut off, rescue efforts become challenges for responders to coordinate and prioritise assistance



Photo by Al Jazeera, December 2021

“Agile City and the Society”

Future cities must be adaptable to global trends and phenomena such as climate change, technological advancements, and shifts in demographics that will shape our city in the future. How societies experience and respond to these changes will be determined by their knowledge and ability to innovate. As a result, fostering a continuous learning and knowledge culture could be critical to ensuring the city’s ability to adapt and thrive in this rapidly changing world.

The decline in the working-age population and the capacity to innovate in the future and create knowledge-based economies could be issues to tackle if our cities want to remain competitive. Some policymakers have started to look into new economic opportunities, known as the “silver economy”, as part of the strategy to enhance workforce participation. If there is a shortage of knowledge and a high-skilled workforce, this concept looks into how the ageing population can contribute to the labour market²². However, more research is needed to understand the implementation and impact of the ‘silver economy’ in city planning.

“Advocating public voices as part of future city development and urban policy.”

We must shift our approaches in urban planning towards a more human-centric approach, having learnt the lesson from how policy can influence and shape city structures and city life. Public perspectives in urban policymaking are often overlooked. Our policymaking has always prioritised technoscientific knowledge, while the public’s perspective has always been viewed as non-expert or irrational. Now, public participation and

participatory planning have become essential in making cities inclusive. "Cities of Barcelona" is one example of an initiative involving citizens in democratic decision-making using ICT-mediated citizen engagement, known as "decidim.barcelona."^{23, 24}

"Improved system of governance and informed decision making"

This author also suggests that urban stakeholders combine their expertise and knowledge with new data to create solutions that reflect how societies envision desirable futures. How this vision can be institutionalised and publicly carried out necessitates a new form of governance, with more evidence-based decision-making for trade-off management.

Until now, there has been a lack of information to aid decision-making. Information or data to support decision-making remains limited, where limited inter-agency data transparency and access pose significant challenges. In addition, another key challenge that urban policymakers face is how to effectively engage with the public and transform the engagement into valuable data for decision-making.

"A risk-sensitive approach in city planning"

The author feels it is also important to consider the various facets of risks in city planning. The city's exposure to multiple types of risk (e.g. geological hazard – sinkhole at Masjid India, climate impacts like the increasing occurrence of floods and landslides) requires a much more risk-sensitive approach to urban planning, which has yet to be considered seriously by many cities. In addition, other risks, such as the increasing threat of terrorism and cyber insecurity, become integral safety aspects of cities that must be considered in city planning.

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