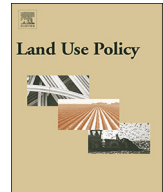




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Pandemic stricken cities on lockdown. Where are our planning and design professionals [now, then and into the future]?



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ABSTRACT

Chinese cities have been placed upon lockdown in early 2020 in an attempt to contain the novel coronavirus (COVID-19), as increasingly huge demands are being placed upon Chinese and international health professionals to address this pandemic. Surprisingly, planning and design professionals are absent in the discourses about existing and post – COVID-19 strategies and actions even though previous pandemics historically revealed major impacts on the urban fabric from social and economic perspectives. This paper is a call for action for international architectural and urban organisations to include pandemics and similar in their disaster management strategies. This need is very evident in their need to better design creative and relevant protocols in partnership with health discipline organisations, and so that their applied deployment in pandemic stricken cities can be effected integrated seamlessly within normal city environment planning activities and also in incident situations like containing the current COVID-19 pandemic.

1. Introduction

As the novel coronavirus (COVID-19) continues to spread further (with by April 22 of reported data, 2,564,190 confirmed cases, 681,842 recovered cases, and 177,424 deaths globally, and 45,365 deaths in the United States (US), 21,282 deaths in Spain, 24,648 deaths in Italy, 20,796 deaths in France, and reputedly 4632 deaths in China) (Aljazeera, 2020b), with 18 Chinese cities initially being placed in 'lockdown' and more recently their 'de-lockdown'. This is serious, as those cities are believed to host an accumulated total of over 56 million people, and the lockdown means cutting access to working public transportation, fresh food and potable water supplies and medical supplies, and requiring people not to go to work or commute through their city, as these cities deal with rapidly overcrowded medical facilities (Buckley and Hernández, 2020). Included is an internet semi-lockdown to mediate formal communications.

The outbreak has not only overwhelmed the health sector in affected areas – especially in China, Italy, the United Kingdom (UK), Spain, the US and France – and is currently rolling into and across major populations like Brazil, Indonesia, India, Pakistan, Bangladesh and across Africa. In all, government and human responses are expected to take a major toll across all other sectors, in an immediate temporal period and additionally over the next 12–36 months, including the economy, education, travel/tourism reminiscent of the 1920s Great

Depression.

The widespread impacts highlight that a pandemic must be seen as being restricted to health professionals because there are significant dimensions of this pandemic across poor quality or cramped intensive urban built environments within which many humans reside and this coronavirus has originated or found a physical catchment easy to disperse within.

2. Background

This pandemic has a direct bearing upon the very foundations of urban planning and architecture theory and practice. For example, while Singapore has been applauded internationally as a January-April 2020 lockdown delimitation exemplar the virus has in April found Singapore's Achilles heel demonstrating that even the best measures have flaws in them (Hodge, 2020).

Thus this intangible earthquake includes built environment professionals as the pandemic, and the subsequent lockdown and progressively slow de-lockdown is directly impacting upon our urban fabrics by threatening human liveability and placing increasing pressures upon available structures and infrastructure including existing hospital buildings, food and potable water sources, and airports amongst others. As the pandemic spreads, the sheer number of humans seeking medical services will increase. Therefore, humans will be demanding urgent

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actions to ensure that those facilities are available and functioning (like in the UK, Spain, France, Germany, Denmark), or the immediate cessation of lockdowns occur in the belief that economics will prevail over personal health (like in Brazil and the US). Similarly, there will now be calls to dramatically upgrade health and disease protocols on board cruise ships (arising from the *Diamond Princess*, *Ruby Princess*, *Grand Princess*, *Zaandam*), and major revisions to ship/immigration protocols so that they are comparable to extent flight/immigration protocols (arising from the *Ruby Princess*). Witness the urgent 2-week construction of a specialized hospital in Wuhan to address and cater for patients, and similar major ‘tent’ venues that have been erected in the US, the UK, and France and innovative reinventions of spaces like train carriages in India.

The absence of a voice by urban planning and architectural professional institutions on this front has been little heard and is of serious concern. This may originate from the fact that pandemics are not classified nor recognized within respective built environment institutional disaster deployment protocols or is the least considered variable in academic teaching activities with students. This is despite the very evident impacts, the legacy of incidents like the Black Death (1331–1353), the Great Plague of London (1665–1666), the San Francisco plague (1900–1904), the Spanish flu (1918–1920), the propensity of major human deaths arising from close living quarters from viruses of similar (like cholera, typhoid, typhus, small pox, measles, tuberculosis, leprosy, malaria, yellow fever), and consequences upon city environments many of which point to the problems of concentrating humans in dense, close-proximity housing and activity environments

As humans, we have learnt these lessons, but they are often deceptively hidden inside other urban discourses. Coming out of periods of major industrialization, civil war, city fires or earthquakes and disease that resulted in major human loss, many countries embraced significant urban planning and landscape architecture strategies to refresh their cities and enhance the liveability of its citizens. As exemplars, many cities quickly embraced Howard’s Garden City ideals in the 1910s–20 s in the post WWI and Spanish Flu eras to craft garden cities (Howard, 1898), brining fresh air filled suburbs to our cultures; corporations like Cadbury’s, Rowntree’s and Fry’s latched onto these ideas for the new factory-cities and such ideals ventured elsewhere across the world as vehicles that assumed the healthy humans = a healthy happy workforce = higher production (Cadbury, 2010); Frederick Law Olmsted’s ‘green lungs’ theory enlivened his winning entry for Central Park (Beveridge et al., 1998) – still today the ‘green lungs’ for New Yorker’s – and then the Boston ‘Emerald Necklace’ Bay Fens (Berenson et al., 2002) in the human devastating post-Civil war era; Melbourne drained its Albert Park Lake swamps to create a major parkland in the 1920s seeking to rid itself of mosquito-infested swamplands in the post WWI and Spanish Flu eras (Victoria. Metropolitan Town Planning, 1929); Bombay (now Mumbai) enabled an Art Deco rejuvenation of drained swamps in the 1920s also seeking to rid itself of mosquito-infested swamplands in the post WWI and Spanish Flu eras (WHC, 2018); Christopher Wren was charged with redesigning London post the Great Fire of 1666 after masses of disease-infested timber structures burnt within the dense haphazard hovels townscape; Sir Patrick Abercrombie, who redesigned London after it was devastated by enemy bombardment in World War II (Forsshaw et al., 1943); and, Haussmann bulldozed swathes of similar residences between 1853–1870 to craft Paris’ iconographic city-scape out of similar poverty-stricken hovel-scapes whilst enabling an internal city de-revolution human management strategy (Carmona, 2002).

These planning and architectural professional institutions recognize that we need not just ‘life-long’ learning, but ‘life-wide’ learning practices to deal with the increasing challenges thwart by this health situation.

This Opinion paper serves as a call for action by these institutions. A call that they urgently need to address the impacts of pandemics are felt

upon tangible and intangible urban environments. This includes urban economies and their human communities, irrespective of the developed nature of each country’s economy.

3. Cities on lockdown in the wake of Covid-19

Since the early detection of the coronavirus in China in December 2019, the rapid deployment of health and research professionals were effected. The resulting pressures from the outbreak has in Wuhan prompted a decision to urgently construct 2 hospitals (1000 and 1300 beds) echoing actions taken during the SARS virus outbreak with the first hospital opening in only six days from construction commencement (Quito, 2020). The second facility involved a 15-day construction period. Such decisions were in addition to a raft of other measures already taken, including quarantine measures, lockdown measures and mobilising health workers from different quarters, including the Chinese military to ensure the spread of the virus is contained (Zheng and Chen, 2020).

Despite these measures, the virus spread has continued to nearly all the provinces across China and led to the lockdown of over 18 cities, trapping approximately 56 million people, and rendering these cities visual ghost towns with minimal activities going on (Aljazeera, 2020a). It is reported (Woodward, 2020) that transportation activities, whether by air, land or water have been restricted, with only a very few automobiles seen on the highways. Thus, only just a few officials are able to move about in these cities. This means a major disruption in the supply chain of essential and vital commodities like fresh food, potable water, medical supplies like hand sanitisers and masks, all of which are urgently needed to curtail the further transmission of the outbreak. These measures are also prompting people to hoard available products as panic and fear grows. As reported by Berlinger et al. (2020), urban officials in Wuhan are beseeching people to restrain from hoarding stocks. Hoarding is seen as a normal psychological and ‘defensive’ reinforcement behaviour as people prepare to lock themselves in their houses for long periods of time, and once the pandemic started rolling across Europe, North America and Australasia toilet paper became a hoarder’s ‘gold’ item.

The impacts upon urban economies is thus very apparent. Additionally, as Taplin (2020) notes, if this situation is maintained for an extended period, it may lead to the collapse of the economies of cities already affected. As of now, aside from the lockdown, and following the declaration by the World Health Organisation (WHO) that the coronavirus is a global emergency (BBC, 2020), and experts warn it could soon be classified as a ‘pandemic’, airlines and maritime organisations from different regions have been halting travel in or out of mainland China; airports like in the US, Canada, New Zealand, Australia and Singapore have now ceased entry or access for Chinese citizens and recent travellers from China. Such has prompted actions by ex-China countries to fly their citizens out of the affected regions whereupon placing them in 14 day quarantine arrangements, food products being transferred from China now being customs quarantined and tested, while other countries like Sri Lanka are preventing their citizens to enter into the south-east Asian region. All these actions are having far reaching economic impacts upon not just Chinese cities and China at large, but upon all cities ex-China that are interdependent upon daily Chinese interactions, movements and trade including the digital translation and transmission of applied design work in and out of China.

4. Pandemics and cities

The impact of pandemics on cities is well documented following the recent 4 pandemics that affected major cities across Africa, Asia, Europe and Arabia in the last 20 years. From the SARS (2002), MERS 2014, H1N1 (2009), Ebola (2014) and Zika (2016), cities have had to grapple with issues related to security, economic downturn and unprecedented public health crises, political stress and tensions and numerous social

problems. This also leads to conflicts between local governments, state governments and national governments (as very evident in the US), city residents and businesses, about who is responsible and who is to be blamed (as very evident in the US, UK, Sweden and India). Thus, during and after the H1N1 in Mexico City in 2009, affected businesses claimed, without success, compensation from government (Bell et al., 2009), there are now questions being raised in Australia about insurance recompense, and the class action litigators and government law investigators are presently building files on Carnival Cruises linked to their *Grand Princess* and the *Ruby Princess* vessels.

In regard to the obvious and hidden social and political tensions associated with COVID-19, it is now widely documented on how psychological forces can lead to citizen-led actions to electronically protest against quarantines, or in other cases, protect themselves from those who may be escaping from quarantined areas. In some instances, like the current case of COVID-19 outbreak, it has been widely reported of how Chinese locals living in towns bordering the coronavirus epicentre (Wuhan) have barricaded themselves and their villages by destroying parts of the roads, or sought to block village entrances by accumulating objects, bricks and dirt, to prevent any inward movement of people, together with setting up manned blockades have been known localised responses (Thomson, 2020). Drastic and dangerous measures, like the carrying of firearms were and are being observed in acts of preventing mixing by outsiders with community members (Little, 2020), and are commonplace in US citizen anti-lockdown protests presently. Altogether, coupled with lack of planning and management, this has led to cases of ostracism and racism inside and outside China that encourages social language and barrier obstruction tactics, passive violence, disrespectful social media tirades and bullying, bodily injuries and may escalate human tensions and disharmony in cities.

Such conscious and unconscious actions, as noted in the previous section, have the potential to trigger issues like hoarding of basic commodities, the spreading of fear and to spark violence in extreme cases. But more importantly will be the severe impacts upon the economic performance and stability of the affected cities, which, as noted by the Joo et al. (2019), will take a substantial amount of time, effort and resources to restore and rekindle confidence. For instance, it is reported that the Middle East Respiratory Syndrome (MERS) pandemic resulted in severe economic losses, especially from major decline in the tourism sector (estimated to be US\$2.6 billion) in South Korea in 2015, that were substantive due to quarantine and travel advisory measures that were associated with the outbreak that are not included in this monetary figure (Joo et al., 2019).

The common denominator in pandemics is a need to strategise urban restructuring focusing upon emergency preparedness. On this scenario, some cities, having learnt from previous pandemic outbreaks, are observed to have constructed new medical facilities with capacities to urgently handle emergency cases. For instance, after the 2014 Ebola outbreak, it is noted that five Ebola Holding Unit (EHUs) models were built at governmental hospitals in Freetown, Sierra Leone, that were instrumental in the containment of reported cases in both Sierra Leone's urban and rural areas (Johnson et al., 2016). During the 2009 H1N1 pandemic, the Children's Hospital of Philadelphia, Pennsylvania, had part of its lobby converted to an auxiliary Emergency Department (ED) while in a similar hospital in Houston, Texas, their parking lot was converted into a pediatric emergency response holding area. Monash (University) Medical Centre in Melbourne, Australia, suddenly erected a semi-permanent COVID-19 resuscitation unit comprising a pre-fabricated semi-containerised two-storey COVID-19 specific-purpose hospital in its car park in April (McGinn, 2020), and in London, UK, a 500 bed Nightingale Hospital equipped with ventilators and oxygen with the capacity increased to treat about 4000 patients has been created within the Excel Exhibition Centre in their Docklands (CNA, 2020). Such built fabric restructuring, to respond to emergencies, is critical, as during the times of outbreaks, medical facilities and their human resources within are usually overwhelmed (Scarfone et al., 2011).

Without such, as has been in the case in previous outbreaks, many cities are bound to be placed on partial or entire lockdown for disease control, thereupon reducing the normal functioning of cities.

Another aspect relates to the use of data in the urban realm to render better urban decisions, as is expounded in the next section.

5. Data-rich cities and urban resilience

The advent of Smart Cities as an urban planning agenda in the 2010s accelerated the installation of sensors reinforcing urban digital networks enabling the generation of an incredible amount of information. We recognize that the first tranche of smart cities initiatives were initiated and driven by technologies corporations in the absence of urban policy and planning; the second tranche witnessed its eager acceptance by policy makers, urban planners, placemakers and academics as the next 'urbanism' shift; the third tranche has seen technologies corporations and or planning entities merge in activities to craft nodes of innovation and experimentation; and we are now witnessing the shift towards smart cities ideas in holistic liveability opportunities and not simply digital tools.

A large portion of Smart Cities technologies is underpinned by micro digital data collection, and the modelling and land use analysis opportunities it offers. The sheer number of the sensors that are projected to surpass 50 billion devices by the end of 2020 are estimated to be producing data to the tune of ZettaBytes (ZB). And, according to Estopace (2019), by 2025, these sensors are projected to have produced approximately 79.4 ZB. To put this in perspective, one ZB, as expressed by Barnett (2016) is equivalent to a thousand Exabytes, or in other words, a billion Terabytes and one terabyte equals one trillion bytes. In terms of Gigabytes which were are increasingly accustomed to, one ZettaByte is equivalent to one trillion Gigabytes. Therefore, by 2025, the data from sensors will be approximately 79.4 trillion Gigabytes.

Such amount of information, if used correctly and efficiently, has the potential to actualise targeted urban agendas. This is especially so for urban centers focusing on rendering a more resilient fabric, as part of the United Nations' Sustainable Development Goals narrated in their SDG 11 that seeks to 'Make cities and human settlements inclusive, safe, resilient and sustainable'.

However, as currently constituted, most of this large body of information in the urban realm is segregated and operates in silos within independent private corporations, especially social media empires, or local or state government bodies. Such trends are influenced by the financial returns associated with data management, the advertising gains associated thereto, and thereby information control. For this reason, most of the corporations which are mostly contracted by local government to supply, install and manage these sensors ensure that their devices are configured in such a way that they are not compatible with those of their competitors (Jawhar et al., 2018). This gives them with a competitive edge in data management and improve their financial standing.

In times of pandemic like the current case of COVID-19 outbreak, the said corporation and the information they gather comes in handy, but the segregation and restricted access only yield disjointed insights (Allam et al., 2020; Allam and Jones, 2020). Such is not effective as it has been established that to overcome the pandemic, open-access of data to allow surveillance, tracing, monitoring and tracking the spread and those affected is paramount (Hamade, 2020). However, this has not been the case as most of the countries are reporting that most of the initial confirmed cases of the virus are imported ones rather than community dispersals, affirming that cross-usage of data, especially in regard to internal country travel, has been seldom made aiding the unprecedented spread of the virus as currently being observed.

While this is the case, there is need for new efforts by engineers, urbanists and policy makers to shoulder the use of urban technology towards better use, as in the case of pandemics. For a start, this would entail that there is a standardization of protocols and networks such

that data from sensors in one region is compatible with systems in other regions (Allam and Jones, 2020). This will render enhanced resilience and aid in disaster preparedness, as is explored in the next section.

6. The policy of selective disaster management

International architectural and urban institutions are well known in government and community responsiveness to disasters. This was evident in deployment responses to tsunamis in Japan, Thailand, Indonesia in Banda Aceh, Sri Lanka (Beck, 2004) and Hurricane Katrina in the US, amongst others. In warfare, like in the recent battlefields of Iraq, Syria, Yemen and others, architects and urban planners have played a key role in their respective country's reconstruction activities, and similarly also in the aftermaths of earthquakes like in Nepal where over 900,000 houses were destroyed (Poon, 2016). The analogy is also in the recent bushfire devastation in the states of New South Wales, Victoria, South Australia and Queensland in Australia where major reconstruction tasks and actions are being proposed for both the human fabric that was destroyed as well as the increasing recognition of the major death toll upon Australia's wildlife (Greha, 2020).

While architects and urban planners they are active in such cases, it is surprising that they are seldom involved when issues of pandemics are concerned. This may be due to the fact that their definition of 'disaster management' is restricted to only tangible types of natural/human-made calamities (bushfires, floods, tsunamis, etc.), and in these, there is no consideration of intangible types of calamities like pandemics. A significant answer to this inactivity lies in the argument that there has and is insufficient time to plan and design such undertakings quickly to cope with emergencies when they occur which explains why the first action is to build temporary facilities. This conclusion is evidenced and commonplace in their absence of policies, guides, frameworks, committees to service and address scenarios for direct involvement before/during/after pandemic incidents, pandemic preparation role-playing events with all relevant agencies (Australia's was last in 2006), and in pandemic preparedness manuals and protocols published by agencies like the World Health Organisation (WHO). Doherty (2014) attributes such absence to the perception that architectural and urban practices are actively only required to enable urgent physical infrastructure re-establishment, and where disasters cause no notable physical damage.

One argument is that emergency responses, with short timespans, is seen as mostly an engineering challenge rather than a design challenge. This is evident in the emergency construction of hospital in the present case of COVID-19 management in Wuhan, and similar international venues discussed above. This may be because most of these responses demand makeshift, temporary structures meant for pandemic containment. This is understandable because pandemics are unpredictable, and each prompts different response strategies (WHO, 2018). However, because these responses impact upon the livelihood of cities, urban protocols need to be devised for both local authorities and citizens, thereby demanding the inclusion of professionals engaged in the built environment. Pandemic preparedness protocols will gain from this when they become part of planning and design strategies.

7. A call to international architectural and urban bodies

Following previous trends, the case of the COVID-19 outbreak, and the subsequent lockdown of cities, have prompted numerous impacts on the social and economic fabric of cities. This shows that there is need for the urgent redefining of disaster management protocols for architectural and urban institutions to include biological disasters like disease epidemics, insect (e.g locust) and animal plagues, provide a direct threat to the liveability of cities. One pointer to this is that already, in the 21st century, the world has already experienced at least four major pandemics, with others like Chikungunya (an infection caused by the *Chikungunya* virus (CHIKV) being a viral disease transmitted to humans

by infected mosquitos) that, though not categorized as a global emergency, has severely impacted upon the livelihood of cities. The challenge to this, as noted by Hunting and Gleason (2012), is that the world is and more often always caught unprepared, despite having a vast array of modern technologies that scaffold quality prior preparedness.

In the case of architectural and urban institutions, it would be important to consider avenues like Bio-risk management, as proposed in 2014 by the International Federation of Biosafety Association (IFBA). On this, the data from Smart Cities coupled with wearable technologies can provide a rich array of possibilities, as showcased by Allam and Jones (2020). However, standardization of protocols by service providers and technology companies needs to be better explored in view to allow for seamless communication while respecting privacy, ensuring safety and enabling quality oversight of medical, health and other sensitive data (Allam, 2020a, 2019; Allam and Dhunny, 2019; Allam, 2020b; Allam et al., 2019; Allam, 2020c).

While reflecting on the lessons learnt from current and past pandemics, it is apparent that there is also a need to expand our understanding of SDG 11 as it pertains to Sustainable Communities to 'Make cities and human settlements [even more than existing aims to be] inclusive, safe, resilient and sustainable'. This is to enable resilience strategies to not only in respect to addressing climate change, but also in addressing pandemic preparedness and mitigation because these have also proven to be disastrous to our current, and rapidly urbanized world.

Although it may be too late to actualise any meaningful actions by architectural and urban institutions for the current COVID-19 outbreak, discussions regarding the involvement of these professionals in addressing future pandemics is extremely important and needs to be partaken now. Their scope of consideration should include understanding the far-reaching benefits, especially in ensuring that the liveability of cities are not compromised. Furthermore, least developed / developing economies and regions, with limited capacity to build emergency facilities and/or cater for the basic survival needs of their communities would be particularly impacted without comprehensive and adequate support of an architectural / urban planning nature.

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