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India's Urban Moment: The Pressing Need for a New Thought Architecture

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ABSTRACT

India's emerging urban moment is caught between two realities: inadequate systems in public transportation, housing, waste management, and access to sanitation and health; and a burgeoning ecosystem of enterprising individuals, communities and start-ups pushing innovative solutions to these very same civic issues. This paper examines India's urban picture and understands how the urban narrative of crumbling systems and inadequate infrastructure is created. It makes a case of how such narratives often fail to highlight the innovative and enterprising spirit of Indian cities. The paper also seeks to reorient current notions of "rural" and "urban" as distinct categories, and highlights the multidimensional processes of urbanisation. It outlines the emerging challenges and opportunities in India, particularly climate change, sustainability, resilience, and the possibilities of digital technologies. The paper closes by locating platform thinking and design thinking as two pillars of a new thought architecture that will convert the challenges of India's urban moment into opportunities.

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INTRODUCTION

India will be the third-largest economy by 2025 (HSBC 2018). Powering that growth is the country's urbanisation, which is accelerating rapidly in absolute numbers, although not as fast if considering decadal growth rates. Either way, the urban population growth is substantial and at scale enough for the World Bank to put India alongside China, Indonesia, Nigeria and the United States as the countries that will lead the global urban surge by 2050 (World Bank 2018). This makes urbanisation in India both a challenge and an opportunity to create innovative solutions. Such solutions have to be not only affordable to a vast majority of urban Indians, but world-class in terms of productisation, service orientation and last-mile delivery. They will also have to be finely attuned to the country's unique and diverse sociopolitical and cultural environment. Finally, such solutions have to be acceptable to a variety of stakeholders and have the capacity to integrate with both public and government institutions and market-facing companies.

India's big opportunities in the urban sector directly emerge from its strong foundation of world-class information technology and digital companies. India's robust manufacturing infrastructure, moreover, is poised to expand its capacity through targeted government programmes focusing on industrial corridors and clusters, as well as increasing investments from global companies and foreign governments. Further, India's emerging ecosystem of innovative start-up companies using digital technologies as their backbone have shown great capacity[1] to cut through so-called "wicked problems" to provide products and services to urban citizens at scale and at affordable price points.

There is, however, a larger context that underpins India's urban challenges and opportunities: the urgent imperative to incorporate sustainability and resilience into all solutions towards a prosperous urban future for India. How India decides to manage its urbanisation and determine its urban moment can serve to reinforce what the rest of the world can learn in terms of creating an ecosystem of frugal engineering solutions, innovative business models, and an out-of-box approach to intractable socioeconomic and cultural problems. In nurturing such an ecosystem, India may well prove to be a strong reference point on how to contain climate change by implementing simple solutions that use existing technological infrastructure and platforms to achieve the ambitious Sustainable Development Goals by 2030. Such solutions may well also show new pathways to adhere to the carbon and emission reductions of the Paris agreement.

INDIA'S URBANISATION: THE BIG PICTURE

The popular narrative of India's urban moment is about crumbling infrastructure, choking systems, weak governance structures, and unplanned localities. Every day, this narrative is reinforced by the realities faced by India's urban citizens: Bangalore's polluted lakes, frothing of foam, and its traffic gridlocks; Mumbai's annual monsoon chaos, crumbling overhead bridges and overcrowded local trains; and Delhi's air pollution and urban sprawls. The elements of the narrative are factually correct, and they are indeed complicated problems for which easy solutions are not in sight.

Yet absent in this narrative are the good urban governance practices, the innovative solutions centred on specific urban issues, enterprising groups and communities cooperating with each other and local solutions that are often based on emerging digital technologies. For every story of Bangalore's gridlocked vehicular traffic, there are an equal number about successful start-ups and innovative electric car-pooling solutions. It is equally true for Mumbai where the city's

enterprising spirit shines through six sigma-certified dabbawallas[i] and share taxis that are economical as they are ecological. So it is for Delhi where basic government services are now available at one's doorsteps through a call centre operation.[ii]

How one tells a story largely depends on how the big picture is sliced into smaller pieces and then reconstituted as a specific narrative. So it is with the popular narrative about India's cities. The chaos-filled picture is divided through three instruments: statistics; urban planning, decision-making, legal structures and governance; and socioeconomic infrastructure. They are then rearranged to serve both as a tautological logic and a state of urban reality. First, numbers are used to earmark the size and scale of the urban problem facing India. Second, the size and scale is directly juxtaposed with a governance deficit that is largely seen to emerge from planning and institutional obsolescence. Third, this deficit is seen to directly impact the delivery of services and the provision of both soft and hard infrastructure. Indeed, it is hard to argue against a narrative that is generally true and one that is backed by numbers.

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i Six Sigma strategies improve the quality of the output of a process by identifying and removing the causes of defects and minimizing variability in manufacturing and business processes. It uses a set of quality management methods, mainly empirical, statistical methods, for an organisation to follow a defined sequence of steps and for specific value targets: reduce process cycle time, reduce pollution, reduce costs, increase customer satisfaction, and increase profits. Though a process, it is also commonly associated with a statistic of just 1.9 errors per billion operations. Please also see: Thomke, Stefan H., and Mona Sinha. "The Dabbawala System: On-Time Delivery, Every Time." Harvard Business School Case 610-059, February 2010. (Revised January 2013.)

ii The Delhi government provides doorstep delivery through the Doorstep Delivery Service (DDS) of 75 public services like birth or marriage certificate, driving license, new water connection, seasonal bus pass, payimg motor vehicle tax, renewing pharmacy licence, and applying for new members or change residential address in ration card. To avail of the services one has to to call the 24x7 helpline number 1076, and the call centre will take down the relevant details and inform you about the documents required as well as the applicable payment. Once the appointment is confirmed, the government will send a facilitator (mobile sahayak) to the pre-decided location - home or office - and help you apply for the service you seek.

Every two seconds an Indian from a rural area moves to a city in search of a better life—that works out to 30 Indians every minute, which is a massive movement every day.[iii] In the next 13 years, World Bank estimates indicate that 40 percent of Indians will be moving to urban areas, or 300 million people adding to the almost 150 million currently scattered in 53 cities across India. By 2047, close to 65 percent of all Indians will be living in urban conglomerations. That means India must provide an urban way of life for at least 800 million Indians in the near to mid-term (Economic Survey 2016-17; Kundu & Mohanan 2017; Sharma 2017; Pranav 2018). This massive urban migration can either be an intractable problem or an opportunity to transform India.

A caveat is in order: these numbers may be well-known in policy and academic circles, but they are rough estimates and fail to capture the nuances of the phenomenon. For example, there is no certainty as to how many men, how many women, and how many children move to Mumbai every day from the rural hinterlands of Maharashtra. Further, these estimates may imply a notion that there is a commensurate proliferation of cities and urban areas. The fact is that there are not enough cities or urban areas, nor is there a concerted effort to generate and invest adequate financial resources, create appropriate infrastructure ecosystems and design governance systems and structures to create the right kind of urban spaces. There is little knowledge, for instance, of how many cities and how much money India would need to safely negotiate this massive human event (Report on Indian Urban Infrastructure and Services, Ahluwalia et al 2011).[2] What is certain is that in the last two decades, Indians have been moving towards cities and in droves (Report of the Working Group on Migration 2017).[3] Behind this story lies a complex narrative of three interlinked elements.

iii Initial data collation and analysis of Future Urbanisms programme, Uppsala University: primary data (government sources), secondary research and data points from the different programmes of a sample of Civil Society Organisations working on rural distress and migration.

Reorienting our Intellectual Response to the Urban Moment

The first element—that "India lives in its villages"—is a truism that is neither questioned nor revisited. If one uses official parameters and definitions it is true. But robust technology-based evidence indicate that India's urban population may already well be in excess of 60 percent (Martino et al, 2016; World Bank, 2010). However, it is the kind of truth that is less organic and more derived—and it has had serious implications for developing a vibrant Indian thought architecture on cities and urban living.

The truism that India lives in its villages has stunted serious academic and pragmatic enquiry into the questions centred on the complicated rural-urban relationship. It has led to an intellectual environment where the notion of "rural" is equated exclusively with a village economy based on farming, a caste-based social structure, and a collective imagination of a rural Indian as a male farmer. The idea of "urban", therefore, is at best a conceptual byproduct and at worst an analytical afterthought that almost always translates urban living as a set of infrastructure investments. In the collective imagination, the urban Indian is a male, English-speaking, educated professional owning a car, earning a salary and working towards securing his future through investments and buying a property.

Such a simplistic and seemingly direct rural-urban relationship ignores multiple realities. Women form the bulk of small and marginal farmers. Farming does not provide employment for more than four months in a year on average. Villages are driven equally by milk merchants, traders, artisans, middlemen and moneylenders. Men, women and children routinely migrate for anywhere between six to nine months to urban areas in search of employment. Many come back, and many do not, often for years. Similarly, cities run on informal economy. Women form a substantial portion of this economy. Most of the work in the cities is contractual in nature, and by default temporary. Cities run on public transportation. And, housing is temporary, informal and

precarious, especially when India tops the house price-to-income ratio with an over 625x difference between an average home price to GDP per capita, with even Singapore not having more than a 26x difference (Global Property Guide 2019; Mammen 2017; Ghosh & Krishan Kant 2015).

Ignoring Inconvenient Truths Leads to Inadequate Policies

An almost willful neglect of these nuances simply because they do not fit the traditional conceptualisation of rural-urban relationship has created a policy environment that fosters a chronically underperforming rural political economy and a haphazard, unstructured and largely unplanned urban ecosystem. This rural crisis is quite well-known, of which indebtedness is but one manifestation. What is less documented is the deepening urban crisis that has almost reached a point of no return. The frothing lakes of Bangalore and the overnight traffic jams in Gurgaon are mere representatives of a deeply flawed thought architecture that governs our understanding of what is rural and what is urban. Such an understanding prevents the thoughtful and policy-led consolidation of suburban and peri-urban areas into a larger urban governance structure. In the process, this keeps millions of people and thousands of households out of the ambit of basic municipal services and infrastructure.

The second element is a derivative of the first—a measuring scale that has been finely tuned to quantify definitions of rural and urban that strengthens the simplistic relational architecture between the two. This scale manifests itself in academic discourses in terms of parameters, quantification methods and standards and then gets disbursed through knowledge centres and hubs like universities and training centres, and eventually permeates the policy and implementation institutions. What it boils down to is a characterisation of urban and rural (Census of India 2011)[4] primarily based on infrastructure density and separate governance systems. In its twin focus on infrastructure and governance, both of which can be reduced to a neat check lists and sets of global

standards, a city becomes a collection of material systems: utilities, public and private transport systems, services economy, housing sector, connectivity, green spaces and central business districts.

In contrast, a village becomes a non-material space that will always require to be upgraded to a material standard that ironically gets defined by the standards of infrastructure and governance density characterising a city (National Rurban Mission 2016).[5] The perpetual debates about the governance architecture promised in the 73rd and 74th constitutional amendment acts and the narratives surrounding smart cities and smarter villages are but two concrete manifestations of this twin focus. This tautological logic leads to two kinds of perversions, the first of which has become a matter of common sense: That urban is an end state to be manifested as an ideal global city, either a vision or a concrete mirroring of other global cities. The second is amplified pressure on rural areas to integrate select infrastructure, originally urban, for a right to access a variety of resources, from government support to technological solutions. In both cases, the discourse consciously prefers a systems thinking approach that places a premium on macro-economic factors, experts and expertise and big trends. This is best illustrated by the typical composition of any seminar or workshop on cities that is invariably dominated by architects, bankers, town planners, economists, and infrastructure and real estate companies.

Both these misrepresentations prevent the conceptualisation of urban and rural as a set of interlinked processes foundationally linked to the movement and lives of people. This lack of an interlinkage prevents the policy and decision-making ecosystem to adequately understand and prepare for three facts. The first is that the capacity of the agricultural sector to absorb labour is extremely limited, and that agriculture's contribution to India's GDP has been consistently low over the last few decades. The corollary is the loss of the ability to leverage the demographic dividend through a process of planned and systematic urbanisation to create socioeconomic capacity that will absorb and engage migrants as productive stakeholders. The third

is that urban poverty is as critical as rural poverty and one cannot be addressed without connecting to the other. Distress migration is the transference of poverty from a rural area to the urban, and both poverties are multidimensional and interconnected, as they represent various forms of deep-rooted deprivation.

The Technology Puzzle

The third element is technology that serves as an independent building block. It is often imagined as the primary solution to issues that are necessarily socioeconomic and political in nature. Taken as part of a set of manifestations emerging from the other two elements, technology acquires a messianic character, viewed as capable of overcoming generations of deficient thought architecture and miraculously transforming Indian cities into cutting-edge global cities of the future. A similar narrative has started emerging for technology-infused villages.

Technology is the most problematic. Not even its most trenchant critics will dispute the transformative potential embedded in technologies like the Internet of Things (IoTs), connected sensors, smart grids and autonomous and intelligent transportation systems. Yet, not even its most ardent supporters would advocate that technology by itself will transform people's lives. When this element is stacked up on top of the other two, the narrative about urban and rural spaces reflects the undertones of the linear simplicity of software architecture, user interface and user experience. In doing so, the urban future gets imagined as something that could be coded, controlled and interfaced.

Such an imagination is not without basis. After all, built, non-built and unbuilt spaces are getting intersected by technologies. These range from access cards for offices and services, networked grids for utility services and sensors in forests to accurately count the number of tigers. Yet to conceive of future spaces as being dominated and led

by technology is an overemphasis on a material foundation at the cost of non-material processes that are dynamically contoured by people. Ironically, the logic underpinning this thought process is not very different from the essentialisation that led to the original cult classic of an idea, "India lives in its villages". The emerging core idea today is that "India lives in its technologies".

NEW CHALLENGES AND OPPORTUNITIES

Humanity is at a crossroads where every major challenge that is emerging from society, business, politics and technology is directly connected to protecting the planet's fragile and complicated ecosystem and, by extension, the existing human lifestyle (Mack 2016).[6] There is a growing realisation in academic and policy circles that these challenges cannot be solved by conventional ways. That realisation logically extends to a growing acceptance that current ways of thinking and doing will have to be changed. Ways of life and living are increasingly urban and will remain significantly so in the near future: although cities cover only two percent of the global land mass, they account for up to 80 percent of energy consumption and generate almost 70 percent of the human-induced greenhouse gas emissions (World Cities Report 2016: 15). Moreover, the proportion of people who are going to live in urban areas in developed countries by 2050 is estimated to be over 85 percent. The global built area is expected to increase at least three-fold.

This means that cities and urban spaces around the world are either faced with, or are soon going to face, a set of challenges that directly emanate from climate change. This message has been reinforced repeatedly by scientific studies that show large-scale climatic changes emerging directly as a result of our activities: Swiss glaciers melting by over 12 percent in the last decade; and 17 of the 18 warmest years in the 136-year record all have occurred since 2001 (Harvey 2018; NASA 2018). In fact, within a span of four weeks across the months of July and August last year there were three climate events of extraordinary ferocity: raging wildfires in Sweden that swept through 20,000 hectares

of forests (*The Guardian* 2018); intense heatwaves in Europe that pushed temperatures in some parts to a record high of 45 degrees Celsius; and devastating Indian monsoon floods in Kerala that displaced at least a million people and killed over 350 (Taylor 2018). These events are an indicator of the perilous state of our 4.45 billion-year-old planet; they are a call for introspection. During the same period, scientists found strong evidence of the harm being caused by people's large-scale industrial and commercial activities.

The first was that the impact of global warming of 1.5 degrees Celsius above pre-industrial levels will be significantly greater than what was earlier anticipated. This conclusion was reached by the United Nations Intergovernmental Panel on Climate Change (IPCC) that studied 6,000 climate events on the back of a one-degree-Celsius rise in global temperatures in the last decade. The scientists also said that the world has to reduce its current rate of carbon and greenhouse gas emissions to zero in the next 12 years if the world is to meet the target of keeping the global warming below 1.5 degrees Celsius. Earlier, scientists working with the IPCC had said that the 45-percent reduction in emissions required to bring it to zero can be done by 2050 to cap global warming to desired levels. The report, however, cautioned that the world is nowhere near achieving the carbon and emission reductions necessary for reaching the target; by all indications, in 2030, the planet will be at least two degrees Celsius warmer than pre-industrial levels (IPCC 2018; Leahy 2018; *The Guardian* 2018a).

The second was that the accelerated glacial melting in the Arctic region, in general, and of the Kongsfjorden in the Svalbard archipelago in particular post-1970s, has had direct adverse impact on the Indian monsoons. These conclusions were derived from a nearly three-decade study made public by climatologists of the National Centre for Antarctic and Ocean Research. The dangers of coastal flooding from glacial melting and the subsequent influx of massive quantities of freshwater are well-documented. However, this particular study found that the huge addition of freshwater to the oceans disrupted the flow of ocean

currents that depend on appropriate levels of salinity to transport and mingle warm and cold water for the formation of rain-bearing clouds. In particular, the increased glacial outflows from Kongsfjorden directly affected Arctic Oscillation, a climatic process stretching back to tens of thousands of years involving winds circulating counter-clockwise around the Arctic that has been at the heart of Indian monsoons (Ghosh 2018).

These challenges are particularly relevant for an urban India, and there is an urgent need for a paradigm shift in the way we conceive of cities, structure urban institutions and organise daily lives. Urban spaces of the future will as a first principle need to have a critical and an equal focus on ecology, environment, access and equity, which are the building blocks of long-term sustainability, as well as economic development, industrial growth, new markets and emerging technologies.

There are five clear implications that emerge from the larger existential crisis facing humanity and the more immediate urban challenge facing India. One, for the first time in human history the number of people living in urban conglomerations and centres will be substantially higher, globally and in India, than the number of people living in rural areas. Two, to achieve the massive infrastructural, social, economic and political transformation needed for such an urban moment in an equitable manner, without putting unnecessary pressure on natural resources and environment, would need the engagement and participation of urban groups and communities. Three, there is a growing body of multidisciplinary research that is making a strong case that all developmental efforts should pass four tests of environmental friendliness, ecological sensitivity, community involvement and people-centricity (World Bank 2006). Fourth, scholars will have to play a critical role in evolving new paradigms. Fifth, converting new ways of thinking into new ways of doing will require a new reflexive foundation. Logically, this means that the way Indians set up our urban moment may as well determine the future of our existence and our planet.

THE EMERGING CONTEXT FOR THE WAY FORWARD

Any new thought architecture should have inherent strength, robustness and flexibility to be converted into a blueprint that can be used by a variety of stakeholders and technical partners. It should also have the ability to inform policy and regulatory frameworks, evolve workable models, prototype them with local communities and provide the right knowledge and information platforms for technology companies, consulting organisations, research institutions and think tanks to engage proactively and productively. Such thought architecture will also have to take into account four realities that are increasingly defining the urban spaces both in the physical and material sense as well in terms of practices, notions and conceptualisations of urbanity and daily urban life.

The first is the rapid and at-scale infusion of digital display, visual augmentation, virtual reality and 3D representation technologies that are already playing a dominant role in the way people are experiencing our urban spaces. In the near future, such digitally augmented urban spaces will result in a collective imagination of urban landscapes as malleable mediascapes that can be coded and contoured in specific ways. This technology-driven imagination will alter the conventional structure of urban discourse and debate, by first delinking and then inverting the relationship between the world of ideas and that of material foundations. In totality, urban "visioning & ideation" will have a "near approximation" of lived experiences converting non-material manifestations – the world of ideas, concepts and visions – into the foundation upon which the material manifestations (or the built environment) will be anchored and brought to life (Swaminathan 2014).

Second, urban spaces are increasingly being conceived of and architected as a set of fluid interfaces that are modular, functional and changeable. An open space is therefore also an art exhibition and a farmer's market, as it is a place for protest movements and start-ups

looking to sell their wares. Such conceptualisation is already driving a new architectural movement that has no disciplinary boundaries, continuously deriving and synthesising concepts, tools, methods, techniques and technologies from all sources, particularly from the world of computer software and codes, information technology, design and artificial intelligence. This is resulting in multiple micro and macro urbanisms, for instance collective workspaces, where each urbanism will have its domain rules of access, rights and privileges. Each urbanism also selectively engages and disengages with other urbanisms with the rules of interaction already established as a set of open-source and open standard protocols. Urbanity of the future will be a set of aggregation models of different interfaces where the value of each aggregation will be determined by the mechanics [how] of the aggregation rather than by its method [what] (Swaminathan 2014b).

Third, urbanity of the future will be a set of evolving values, mindsets and characteristics of a process deeply infused by global practices and local manifestations rather than an end-state of an ideal global city. In being so, what is "urban" and what is "rural" will not be as much a function of geography, economy, location, remoteness or infrastructure density, as it would be a function of how people create networks of transactions around a framework of interaction-engagement-negotiation–contestation (IENC). This new form of people-centric place-making will be anchored to the principles of sustainability, resilience and networked value. Urbanism will become an analytical category for place making to contour spaces based on people networks (Swaminathan 2015a).

The fourth is that urban place-making in the future will be manifested as distributed models of circular cultural economies with collectives and communities playing a significant role in defining the social structure, economy and the governance architecture. This will result in new forms of social contract that will make local communities powerful owners, designers and stakeholders of urban resources, urban spaces and global flows fundamentally changing existing political structures. Such local

contracts will be aggregated at regional and global levels through different civil society driven forums and platforms to directly engage with and contour the nature and character of global flows and its local channels and its hyperlocal repositories and manifestations. All these aspects are not yet being given the attention that they deserve, especially in the urban policy, decision-making and academic circles (Swaminathan 2017).

PLATFORM THINKING & DESIGN THINKING FOR SOCIAL SCALE

It is within this context that one needs to explore platform thinking and design thinking as the umbrella net for a new thought architecture. The origins of platform thinking are from the world of software development and information technology. In that world, it is used as overarching thought architecture to build a business by figuring out ways by which an external ecosystem of developers and users can be leveraged to create value. Societal platform thinking uses the same logic and identifies an external ecosystem of stakeholders, technology partners and community leaders who can be leveraged to evolve technology-enabled distributed models that drastically reduce access barriers across a variety of physical, financial and social constraints, while increasing participation of local business owners creating social capital and financial value.

The defining feature of platform thinking is its fundamental divergence from systems thinking that typically characterises a problem as a demand or a supply issue. This predetermines two solutions. The first is to increase the services, products, public and private goods to cater to the expanding market of consumers and citizens. The second is to optimise the supply, logistics and retail networks for efficiency and plugging of leakages. Platform thinking requires a problem or an issue to be rethought from the perspective of its location and position within a larger ecosystem. The objective of understanding the ecosystem is to identify all existing possibilities available within it to see if they could be linked up or stacked together in a unique way to

create innovative solutions. Platform thinking places a premium on creating solutions using existing elements in a frugal, reusable and a sustainable manner.

Within the framework of platform thinking, for instance, speed, scale and sustainability are a by-product of a network effect that is more dependent on the flexibility of a business model to allow engaging social connections and transactions to develop organically, rather than on traditional methods tied to marketing, branding and financial resources. This unconventional logic gets executed downstream in the form of a non-proprietary, open-source and open-standard platform that is available to anyone who wants to build business layers upon it. Think Facebook and Twitter, the platform; and media products and services, the business layer. If this logic were to be extended to the domain of public goods, then think Aadhaar, the platform whose full potential is yet to be explored, and the BHIM app, the business layer whose possibilities, again, are immense. A platform comes embedded with four advantages. First, it makes some of the known unknowns into known knowns by unpacking them and creating a set of business rules to navigate them. Aadhaar makes identity and authentication from a known unknown into a known known for several businesses that otherwise would not have been able to invest resources to that end. This 'act of knowing' allows robustness of execution to be determined more by its detailing and consumer connect and less by random variables. In short, platforms provide a standard set of basic infrastructure, a level-playing field, for everyone.

Second, platforms are open to anyone who wants to use it, often without identity and documentation. The open architecture is deliberately designed to have a near-zero entry barrier for people and ideas. In short, platforms inject equitable access, a fundamental principle of democracy, into market and social dynamics that are often skewed in bizarre ways at the bottom of the pyramid. Third, platforms are amenable to all spectrums of capital: from philanthropic and patient capital to high-risk, high-return corporate loans. This agnosticism

allows a diversity of business models to co-exist which, nevertheless, derive their master codes from a single fount. In short, a platform gives full play to the first principle of organic aggregation: the sum of the parts is always greater than the whole. Fourth, and arguably the most important, the architecture of a platform is finely tuned to different degrees and notions of scale, speed and sustainability, bringing into sharper focus local communities, indigenous talent, hyperlocal markets and thought processes that are more a value proposition than return on investment. This quality breaks the existing mental models of centralisation that favour a one-size-fits-all approach. In short, platforms are extremely malleable and ductile, taking on the role of a common service rather than a market place, making it appropriate for a variety of business models.

The origins of design thinking, for its part, can be traced to the design world where it started off as a creative strategy to visualise the process flow and the outcome of a design. Design thinking emphasises a solution-based approach with the intent of producing a personal experience for every single person who is expected to be a part of the solution. It also differs significantly from the scientific method where, for instance, feedback would necessarily require observational evidence in the form of measurable and quantifiable data. In design thinking, feedback, for instance, will necessarily consider the emotions that are generated when people interact with a design interface. The intent for collecting feedback is to integrate it into the iterative process of modelling a set of solutions. Design thinking prefers to evolve intermediate solutions as potential starting points to redefine the problem so the process itself becomes co-evolutionary with each intermediate solution leading to a new set of problems till the final goal is reached.

Design thinking also employs a process of synthesis rather than analysis, where separate and seemingly disparate elements are put together to progressively create better and more coherent wholes. Design thinking also prefers employing divergent thinking in the first

instance, rather than convergent thinking, to ensure that the solutions ecosystem is always richly populated with a diversity of thought processes and local frameworks, allowing for contexts, people and communities to choose and customise whatever is applicable to their social, economic, political and cultural environments. A typical design thinking process has seven stages of design, research, ideate, prototype, choose, implement and learn (Cross 2018; Liedtka 2018).[7] Within these seven steps, problems can be framed, the right questions can be asked, more ideas can be created, and the best answers are chosen.

A typical example would be how students of National Institute of Design (NID) and CEPT University were given the challenge of designing waterless compost toilets as part of the Swacch Bharat mission for less than INR 20,000. The students, professionals and design consultants from global design labs used processes of platform and design thinking to interact, engage and transform the end users into stakeholders in the design and production process. This turned the final productisation into an iterative process and also brought in the approaches of rapid prototyping and learning by doing. This meant that sample toilets were quickly created, rolled out to the different groups, feedback taken and changes implemented. The process was continued till all stakeholders were satisfied and accepted the product and its associated ecosystem. The steps are not linear and can occur simultaneously and be repeated (Chaudhuri 2018; Mathias 2017; Rao 2015).

CONCLUSION

With platform thinking and design thinking as overarching framework for time-bound and at-scale solutions, the intractable Indian urban quagmire suddenly transforms into a series of challenges that can be approached within a rubric of problem-solution framework that can be designed, implemented and executed at a networked scale and distributed size. This is the right time for India to foray into unexplored new ground to decisively rewrite and reconfigure existing knowledge about urban life, cities and its future.

It is the right time, because Indians are aware of their need for cities. It is the right time, also because India can take a new path that can be molded and defined by principles of sustainability and resilience that others will not be able to do, simply because those countries are on a different path. It is the right time because the India of today has an inherent capacity to absorb global practices, cutting-edge technologies and thought processes. The country is also acquiring a unique entrepreneurial ability to transform that absorption and retention to architect models of living that are local, contextual and modular. It is also the right time because Indian sociocultural practices have traditionally been ecologically friendly, inclusive, and representative of new-age design and platform thinking. Synthesis, for instance, which is the crux of design thinking, has had a long Indian history. It is also the right time because the success of the global community hinges on India's own. ORF

ENDNOTES

1 The manner in which Aadhaar opened up, seeded and amplified the combined ecosystem of digital payment-transaction-delivery services based platforms for electronic commerce, public transport and basic urban services ranging from routine ones like rental accommodation, painting, plumbing, carpentry to not so routine tasks like pet care, urban farming to senior care professional services is exposing the processes of urbanisation to newer business models and a more customised approach to needs and requirements.

2 It is not as if efforts have not been made to estimate the amount of investment required. But such efforts, like the 2011 Report on Indian Urban Infrastructure and Services, deliberately chose to estimate the investment required only to provision infrastructure till the period of 2031 across the eight sectors of water supply, sewerage, solid waste management, storm water drains, urban roads, urban transport, traffic support infrastructure, and street lighting. The report chose not to cover the investment requirements of relatively 'softer' infrastructure like primary health, primary education, and electricity distribution.

3 The January 2017 Report of the Working Group on Migration, for instance, while analysing the distinction between pull and push migration comes to what seems like a rough and ready conclusion that many of the push driven migrants (like from Marathwada) "are not necessarily financially worse off from the experience." Such a conclusion, even from a narrow financial lens, does not take it account whether such migration (also family migration) happened due to absolute penury and destitution, which is true in many such cases. In such a scenario of zero capital and liquid asset base, any financial gain would register as substantial in statistical terms.

4 The Indian Census definition of rural and urban is problematic at many levels. For instance, constituents of an urban area are Statutory Towns, Census Towns, Outgrowths and Urban Agglomerations. Both Outgrowths and Urban Agglomerations can include village areas or

contiguous parts of a village area that has urban amenities. In short, urban is defined exclusively only in terms of provision of physical infrastructure. Such an infrastructure focussed definition of what constitutes urban is limiting in several ways in the contemporary scenario of urbanisation that is essentially an amalgamation of multiple processes rather than an end state composed of a collection of physical infrastructure and assets.

5 The most notable effort to change this approach comes from the recently launched National Rurban Mission (February 2016), also called the Shyama Prasad Mukherji Rurban Mission. But it is yet to be seen how the softer aspects of poverty alleviation and economic development and the concept of Viability Gap Funding (VGF) within the governance structures of Gram Panchayat will be implemented and carried out.

6 This article is based on a new body of interdisciplinary research that is adding to the emerging body of data and facts arguing for a carbon neutral society.

7 The notion of design as a 'way of thinking' in the sciences can be traced to Herbert A. Simon's 1969 book *The Sciences of the Artificial* and in design engineering to Robert McKim's 1973 book *Experiences in Visual Thinking*. Bryan Lawson's 1980 book *How Designers Think*, primarily addressing design in architecture, began a process of generalising the concept of design thinking. A 1982 article by Nigel Cross on 'Designerly Ways of Knowing' established some of the intrinsic qualities and abilities of design thinking that also made it relevant in general education and thus for wider audiences. Peter Rowe's 1987 book *Design Thinking*, which described methods and approaches used by architects and urban planners, was a significant early usage of the term in the design research literature. An international series of research symposia in design thinking began at Delft University of Technology in 1991.

REFERENCES

Appadurai, Arjun. 2013. *The Future as a Cultural Fact: Essays on the Global Condition*. London: Verso

Ahluwalia, Isher Judge et al. 2011. *Report on Indian Urban Infrastructure and Services*. March 2011.https://www.indiawaterportal.org/sites/indiawaterportal.org/files/Estimating%20Investment%20Requirements_Urban%20Infrastructure%20Services%20in%20India_HPEC%20Report_MoUD_2011.pdf. (Accessed 2019-04-01).

Arakali, Harichandran. 2018. "Hasiru Dala is Lifting Waste Pickers Up from the Dumps" *Forbes India* May 30, 2018. www.forbesindia.com/article/sustainability-special/hasiru-dala-is-lifting-waste-pickers-up-from-the-dumps/50337/1. (Accessed 2019-04-02).

Boyle, Mark 2010. *The Moneyless Man*. Oxford: One World Publications.

Breman, Jan 1997. *Footloose Labour: Working in India's Informal Economy*. Cambridge: Cambridge University Press.

Census of India 2011. *Some Concepts and Definitions*. http://censusindia.gov.in/2011-prov-results/paper2/data_files/kerala/13-concept-34.pdf. (Accessed 2019-02-15).

Chaudhuri, Prasun 2018. "Design Thinking: A New Style of Solving Problems With a Dose of Empathy". *The Telegraph*. November 11, 2018. www.telegraphindia.com/education/design-thinking-a-new-style-of-solving-problems-with-a-dose-of-empathy/cid/1675906. (Accessed 2019-01-16).

Cross, Nigel 2018. "A Brief History of the Design Thinking" *Research Symposium Series*, Design Studies Vol 57, pp 160–164.

Ghosh, Joydeep & Krishan Kant 2015. "Rajan is Right: Salaried Class Cannot Afford a House". *Business Standard*. August 22, 2015. www.business-standard.com/article/pf/rajan-is-right-salaried-class-cantafford-a-house-115082101003_1.html. (Accessed 2019-01-16).

Ghosh, Sahana 2018. "How a Melting Glacier in Norway Is Influencing the Monsoon in India". *Scroll.in* August 30, 2018. https://scroll.in/article/892231/how-a-melting-glacier-in-norway-is-influencing-the-monsoon-in-india. (Accessed 2019-01-16).

Global Property Guide 2018. "Price/GDP per Cap - India Compared to Asia". December 16, 2018. www.globalpropertyguide.com/Asia/India/price-gdp-per-cap. (Accessed 2019-01-16).

Graeber, David 2011. *Debt: The First 5,000 Years*. Brooklyn, NY: Melville House.

Harvey, Chelsea 2018. "Why Are Glaciers Melting from the Bottom? It's Complicated." *Scientific American* April 12, 2018. www.scientificamerican.com/article/ why-are-glaciers-melting-from-the-bottom-its-complicated/. (Accessed 2019-03-05).

Henry, Janet. 2018: "The World in 2030". HSBC Holdings Plc. September 28, 2018. www.hsbc.com/news-and-insight/2018/the-world-in-2030. (Accessed 2019-04-02).

India Today 2019. "Good news: Meet 2 entrepreneurs who converted discarded buses into toilets for women in Pune". www.indiatoday.in/good-news/video/good-news-meet-2-entrepreneurs-who-converted-discarded-buses-into-toilets-for-women-in-pune-1429184-2019-01-11 (Accessed 2019-04-02). IPCC 2018. *Special Report: Global Warming of 1.5° C*.

Kundu, Amitabh & P C Mohanan 2017. "Internal Migration in India: A Very Moving Story". *The Economic Times*. economictimes.indiatimes.com. April 11, 2017. (Accessed 2019-04-02).

Leahy, Stephen 2018. "Climate Change Impacts Worse Than Expected, Global Report Warns". *National Geographic* October 7, 2018. www.nationalgeographic. com/environment/2018/10/ipcc-report-climate-change-impacts-forests-emissions/. (Accessed 2019-01-16).

Liedkta, Jeanne, Andrew King & Kevin Bennett 2013. *Solving Problems with Design Thinking: 10 Stories of What Works*. New York: Columbia Business School Publishing.

Liedtka, Jeanne 2018. "Why Design Thinking Works" *Harvard Business Review*. September-October 2018. hbr.org/2018/09/why-design-thinking-works.(Accessed 2019-04-02).

Mack, Eric 2016. "Welcome To The 400 PPM World -- What The Heck Is 400 PPM, Anyway?" *Forbes*. October 27, 2016. www.forbes.com/sites/ericmack/2016/10/27/welcome-to-the-400-ppm-world-what-the-heck-is-400-ppm-anyway/#13aa27e11f45. (Accessed 2019-04-02).

Mammen, Sneha Sharon 2017. "It Will Take 32 Years of Your Income to Buy a House in Mumbai". October 9, 2017. www.proptiger.com/guide/post/it-will-take-32-years-of-your-income-to-buy-a-house-in-mumbai. (Accessed 2019-04-02).

Mathias, Tamara 2017. "How Design Thinking is Solving Real Problems in Rural Industries". *The Better India*. January 17, 2017. www.thebetterindia.com/81699/kanika-gupta-izel-labs-design-thinking/.(Accessed 2019-04-02).

Martino, Pesaresi, Melchiorri Michelle, Siragusa Alice & Kemper Thomas 2016 (ed.) *Atlas of the Human Planet: Mapping Human Presence on Earth with the Global Human Settlement Layer*, Luxemburg: Joint Research Centre (JRC), European Union

Ministry of Housing and Urban Poverty Alleviation 2017. *Report of the Working Group on Migration*. January 2017. mohua.gov.in/upload/uploadfiles/files/1566.pdf. (Accessed 2019-04-02). NASA 2018: "Vital Signs: Global Temperature." https://climate.nasa.gov/vital-signs/ global-temperature/. (Accessed 2019-03-05).

Patel, Tanvi 2019: "Meet the Pune Duo Turning Old Buses Into Clean Toilets for Women." *The Better India* January 3, 2019. www.thebetterindia.com/168538/india-clean-toilets-innovation-woman-safety-pun/. (Accessed 2019-04-02).

Pranav, Divay 2018. "India Preparing for the Biggest Human Migration on the Planet". *investindia.gov.in*. January 2, 2018. www.investindia.gov.in/team-india-blogs/india-preparing-biggest-human-migration-planet. (Accessed 2019-04-02).

Rogers, Everett M. 2003). *Diffusion of Innovations* 5th ed. London: Simon & Schuster.

Rosling, Hans 2018. *Factfulness: Ten Reasons We're Wrong About the World – and Why Things Are Better Than You Think*. London: Spectre.

Sen, Amartya & Martha Nussbaum 1993. *The Quality of Life*. Oxford & New York: Clarendon Press, Oxford University Press.

Sharma, Krishnavatar 2017. "India Has 139 Internal Migrants. They Must Not be Forgotten". weforum.org. October 1, 2017. www.weforum.org/agenda/2017/10/india-has-139-million-internal-migrants-we-must-not-forget-them/.. (Accessed 2019-03-21).

Swaminathan, Ramanathan 2014.,'Epistemology of a Sea View: Mindscapes of Space, Power and Value in Mumbai', *Island Studies Journal*, Vol. 9, No. 2, pp. 277-292

Swaminathan, Ramanathan 2014b 'The politics of technoscapes: algorithms of social inclusion and exclusion in a global city'. Journal of International and Global Studies, 6(1), 90–105.

Swaminathan, Ramanathan 2015 The emergent artificial intelligence of green spaces: digital gaze and urban ecology in Asia. Asiascape: Digital Asia, 2(3), 238–278.

Swaminathan, Ramanathan 2017. "Quantum Urbanism: Step One, Dismantle Systems Thinking Once and For All." www.governancenow.com/views/columns/quantum-urbanism-step-one-dismantle-systems-thinking-once-and-for-all-. (Accessed 2019-03-05).

Swaminathan, Ramanathan 2018a. "Energy as the New Value System for Redesigning Daily Life." www.governancenow.com/views/columns/energy-as-the-new-value-system-for-redesigning-daily-life. (Accessed 2019-03-05).

Swaminathan, Ramanathan 2018b. "Quantum Urbanism in Action: To Protect Earth, Rethink Waste". www.governancenow.com/views/columns/quantum-urbanism-in-action-to-protect-earth-rethink-waste. (Accessed 2019-03-05).

Taylor, Alan 2018. "Devastating Monsoon Floods in Kerala, India". www.theatlantic. com/photo/2018/08/devastating-monsoon-floods-in-kerala-india/568171/. (Accessed 2019-01-16).

The Guardian 2018a. "We Have 12 Years to Limit Climate Change Catastrophe, Warns UN". www.theguardian.com/environment/2018/oct/08/global-warming-must-not-exceed-15c-warns-landmark-un-report. (Accessed 2019-01-16).

The Guardian 2018b. "Wildfires Rage in Arctic Circle as Sweden Calls for Help". www.theguardian.com/world/2018/jul/18/sweden-calls-for-help-as-arctic-circle-hit-by-wildfires. (Accessed 2019-01-16).

The World Bank 2006. *Disbursement Guidelines for Projects*. May 2006. http://documents.worldbank.org/curated/en/410851468161639013/pdf/385750ENGLISH01ement0Guide01PUBLIC1.pdf. (Accessed 2019-01-26).

The World Bank 2015. "Leveraging Urbanisation in India". September 2015 www.worldbank.org/en/country/india/brief/leveraging-urbanization-india (Accessed 2019-05-28). http://documents.worldbank.org/curated/en/410851468161639013/pdf/385750ENGLISH01ement0Guide01PUBLIC1.pdf. (Accessed 2019-01-26).

The World Bank 2018. *World Urbanisation Prospects: 2018 Revision*. September 2017. data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=IN (Accessed 2019-04-02).

World Cities Report 2016. 'Cities Contribution to Climate Change' in *Development and Urbanisation: Emerging Futures*, United Nations Human Settlements Programme (UNHSP). pg 15.

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