Culture refers to not only the arts but also other manifestations of human intellectual achievement regarded collectively. It similarly refers to the customs, institutions and achievements of a social group, a people, or a nation. Innovation refers to the action or process of change, alteration, or revolution; a new method of idea creation or product that may bring about change. It is easy to assume that innovation may be juxtaposed to the preservation of culture and time-tested rituals. Yet as human settlements grew, and as streets and squares evolved through the diverse exchanges of people trading, celebrating, rallying and socially interacting, it should come as little surprise that cities and its places would become, and continue to be, centres of culture and innovation that can be inextricably linked. Culture and Innovation in cities can potentially take on different complexities if viewed through the lens of academics and practitioners drawn from different geographies, disciplines, or fields of expertise when addressing particular urban challenges. It is through this complexity of views that this book seeks to provide a broad perspective on culture and innovation in the context of global cities today, and a rich cornucopia of insights from thought leaders within their respective fields to shape the cities of tomorrow.
At the Department of Municipalities and Transport (DMT), we initiate, drive and support Abu Dhabi’s urban development strategy. By transferring our vision and overarching principles to physical settings, we develop strategic plans that are designed to shape the Emirate. The vision is built on a comprehensive analysis of the urban fabric, land availability and its best use, environmental issues, mobility, infrastructure and urban services, that need to be integrated in our Emirate-wide planning strategy. Developing appropriate infrastructure, while preserving the environment, forms one of the key priority areas. With the expertise of DMT, the Government of Abu Dhabi will ensure the development of a professionally designed and well-managed urban environment in the Emirate’s towns and cities, complete with world-class traffic and transport systems. The simultaneous development of the Al Ain and Al Dhafra Regions is designed to keep pace with that of the Capital Region. It is also an important policy priority to achieve an Emirate-wide distribution of economic activities and associated benefits. The Plans for the Capital, Al Ain, Al Dhafra and the Emirate’s marine areas, offer a vision for the evolution of the Emirate over the next years, and provide a blueprint for Abu Dhabi’s long-term success. As the first planning programme of this kind and scope within the region, the work of the DMT has become a best-practice benchmark for future urban design within the UAE and beyond.

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About United Nations Human Settlements Programme (UN-Habitat)

Urbanisation is the defining trend of our age and is happening at a phenomenal rate. Half the world’s population now live in cities, and this is projected to increase to two-thirds by 2050. Cities face massive environmental, socio-economic and spatial challenges. Today many urban residents lack water, sanitation, energy and public transport. With no land security, many cannot access affordable, adequate homes, jobs, schools and health care. At the same time cities are hubs of creativity, opportunity and economic development driving change at scale. At UN-Habitat, we believe cities can solve many of the challenges our world faces. As a centre of excellence and innovation, we support countries and cities in taking advantage of the opportunities urbanisation offers. We work in over 90 countries with governments and local partners and our high-impact projects combine world-class expertise and local knowledge, and provide achievable, customisable and scalable solutions to the toughest urbanisation problems. We want to ensure cities become inclusive and affordable drivers of economic growth, social development and environmental change. UN-Habitat’s objective is to advance sustainable urbanisation as a driver of development and peace to improve living conditions for all.

About Pomeroy Academy

Pomeroy Academy are educators and researchers of sustainable built environments. The courses created and curated are specialist in nature and focus on the process of designing climate-responsive sustainable developments through an evidence-based approach. The courses seek to heighten awareness of the green agenda and provide students and professionals with the necessary skills to make a difference in their respective fields. The Academy was founded by Prof. Jason Pomeroy, whose interests lie in sharing sustainable design knowledge with an industry that is increasingly needing to respond to climate change.

About Tenth World Urban Forum

The World Urban Forum (WUF) is the world’s premier conference on urban issues. It was established in 2001 by the United Nations to examine one of the most pressing issues facing the world today: rapid urbanisation and its impact on communities, cities, economies, climate change and policies. Organised and convened by UN-Habitat, and held every two years in a different city. WUF has become one of the most dynamic gatherings in the international arena for exchanging views and experiences on urban challenges. The inclusive nature of the forum, combined with high-level participation, makes it a unique occasion.

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“I commend the Abu Dhabi Department of Municipalities and Transport, UN-Habitat and Pomeroy Academy, for bringing this book to fruition, as it features meticulous observations that are built around six thematic pillars of society, space, culture, environment, technology and economy”.

- H.E DR THANI BIN AHMED AL ZEYOUDI
Cabinet Member and Minister of Climate Change and Environment, Dubai

“We are delighted to see that the insights shared in this book by leading authorities from diverse fields of expertise acknowledge the important roles culture and innovation play in shaping our ‘cities of opportunities’.”

- MAIMUNAH MOHD SHARIF
Under-Secretary-General and Executive Director,
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Introduction

By Prof. Jason Pomeroy
 Contributors

**ANDREW GRANT**
Founding Director, Grant Associates
Bath, United Kingdom
Andrew Grant is a Landscape Architect whose work explores the connection between people and nature. In 2012, he was awarded the title of RSA Royal Designer for Industry in recognition of his pioneering global work in landscape architecture — such as the multi-award-winning Gardens by the Bay in Singapore. He is a Visiting Professor at the University of Sheffield, a member of the Bath World Heritage Site Advisory Board and co-founder of the pop-up festival ‘Forest of Imagination’.

**EMMANUEL BENBIHY**
Producer, Cities of Love Franchise
Shanghai, China
Emmanuel Benbihy has 25 years of experience as a creator, strategist and film producer. He has been living in Shanghai since 2009. With the movie *Paris, je t’aime*, he created the ‘Cities of Love’ series, now pursuing its journey around the world (New York, Rio, Berlin, Jerusalem, L.A., Shanghai, to name a few). The ‘Cities of Love’ global initiative is building the ‘communities of the people who love their cities’ through creative city-centric media platforms and initiatives. Benbihy is developing a network of non-profit enterprises whose purpose is to engage millions, lift spirits, foster creative contribution to city life and support sustainable urban development.

**TOMAS DIEZ**
Director, Fab Lab, Barcelona
Barcelona, Spain
Tomas Diez is a Venezuelan Urbanist specialising in digital fabrication and its implications on future cities and society. He is the co-founder and director of Fab Lab Barcelona at the Institute for Advanced Architecture of Catalonia (IAAC) and is a founding partner of the Fab City Global Initiative. He is also the director of the Master in Design for Emergent Futures. Diez was appointed by *The Guardian* and *Nesta* as one of the top ten digital social innovators to watch in 2013, and was awarded by the Catalan ICT association as the entrepreneur of the year in 2014. His research interests relate to the use of digital fabrication tools to transform reality and how the use of new technologies can change the way people consume, produce and relate with each other in cities.

**H.E DR THANI BIN AHMED AL ZEYOUDI**
Cabinet Member and Minister of Climate Change and Environment
Abu Dhabi, United Arab Emirates
His Excellency Dr Thani bin Ahmed Al Zeyoudi was appointed Minister of Climate Change and Environment for the UAE in February 2016. In this role, he oversees the Ministry’s mission to spearhead the UAE’s drive to mitigate and adapt to the impact of climate change and protect the country’s ecosystems through developing and implementing effective measures and policies. He previously served as Permanent Representative of the UAE to IRENA and Director of the Department of Energy and Climate Change at the Ministry of Foreign Affairs and International Co-operation. In 2015, he was awarded the first GCC Prize for Excellence in recognition of his efforts in renewable energy. His Excellency Dr Al Zeyoudi holds several degrees, most notably a PhD in strategy, programme and project management from SKEEMA Business School.

**PROF. KAYLA FRIEDMAN**
Course Director, IDBE, University of Cambridge
Cambridge, United Kingdom
Prof. Kayla Friedman is Course Director for the University of Cambridge’s Master’s in Interdisciplinary Design for the Built Environment (IDBE) and Senior Programme Manager at Cambridge Institute for Sustainability Leadership (CISL). As a licensed New York State Architect with ten years’ professional experience, she has explored the challenges of improving sustainability in the built environment and engaged diverse stakeholders in vision creation and implementation in the US and UK. Friedman holds a PhD from the University of Cambridge; Master’s degrees in Architecture and Urban Design from Washington University in St Louis and a BSc from the University of Virginia. She is particularly interested in how continuing education for working professionals can enrich their professional practice.

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Akul Dayal is an Associate Partner in McKinsey & Company’s Middle East office. He is a regional leader of McKinsey’s work in Real Estate, Cities and Urban development. Akul is passionate in shaping the digital and technology revolution in this sector and leads McKinsey’s work on smart cities and data-driven urban planning in the region. Akul holds a B. Tech in Mechanical Engineering from IIT Delhi and an MBA from University of Oxford, where he studied as a Rhodes Scholar.

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LIM TECK YIN
CEO, Sport Singapore
Singapore
Lim Teck Yin is the CEO of national sport promotion agency, Sport Singapore. He developed Vision 2030, the strategic direction for Sport Singapore’s work plans and organisational development. The new Masterplan’s tenet on partnering the public, private and people sectors in nation-building through sport has informed Sport Singapore’s integrated strategy across mass participation, high performance and infrastructure efforts. Lim also led and managed major national projects including the 28th SEA Games and the 8th ASEAN Para Games in 2015. Under his leadership, Sport Singapore launched ActiveSG, the national movement for sport, which has attracted over 1.7 million members since its launch in April 2014.

SAMVIT KANORIA
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Samvit Kanoria is a Partner in McKinsey & Company’s Middle East office. He is a global convenor of McKinsey’s work in Real Estate, Cities and Urban Development. Through this work, and broader work on public sector transformation, his ambition is to help transform the life of city residents. He is passionate about helping transform development and asset management clients in both performance and digital-led end-to-end transformations. He has spoken in many global forums including MIPIM and at ArabNet. He formerly worked at Goldman Sachs, Temasek Holdings and holds a Bachelors’ (Hons) in Management Science & Engineering from Stanford University.

PROF. TIM HEATH
Chair of Architecture and Urban Design, University of Nottingham
Nottingham, United Kingdom
Tim Heath is a professor of architecture and urban design at the University of Nottingham, UK, where he has been an academic since 1993. He is a registered architect, qualified town planner and experienced urban designer who is actively engaged in research, teaching and practise through which he pursues his passion for cities and placemaking. He is well known internationally as the course director for the MArch in Sustainable Urban Design, author of many books and academic papers and supervisor of over 50 PhD students. Significant publications include Public Places Urban Spaces (2010), which has also been published in Mandarin, Traditional Chinese, Arabic and Korean. Revitalising Historic Urban Quarters (2013), and Heritage Led Urban Regeneration in China (2017).

SANDRA HARDING
Vice Chancellor and President, James Cook University
Townsville, Australia
Sandra Harding took up her appointment as Vice Chancellor and President of James Cook University Australia in January 2007. Educated at the Australian National University, The University of Queensland and North Carolina State University (US), Harding has extensive academic and leadership experience. An economic sociologist by training, her areas of enduring academic interest include work: organisation, markets and how they work. She also has a keen interest in public policy in two areas — education policy and related areas: the global Tropics, northern Australia and economic development. In addition, she has undertaken a wide variety of senior university-aligned roles as well as memberships/directorships of a variety of local, national and international boards and councils.

IVAN MATOV
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Ivan Matov is an Associate in McKinsey & Company’s Middle East office. He is an expert of McKinsey’s work in Infrastructure and Cities development and Engineering and Construction companies’ turnarounds. He is passionate about helping develop and create infrastructural megaprojects and people oriented cities. He formerly worked at Vinci Construction Grands Projets. GDF SUEZ. A.T. Kearney and holds a Master of Civil Engineering from Technical Universit of Munich and Ecole Nationale des Ponts et Chaussées and MBA from INSEAD.

CHARIF HAMIDI
Co-founder and CEO, ED 4.0
Abu Dhabi, United Arab Emirates
An investment banker and strategy consultant turned social entrepreneur and educator, Charif Hamidi is the founder of ED4.0: a research and development social enterprise in the field of education innovation. Particularly interested in technological advancements impact on labour markets, Hamidi is an avid researcher and often contributes to journals such as the Harvard Business Review. He is frequently invited to speak at international conferences (such as the World Economic Forum) and is a regular commentator on the topics of monetary policy, education technology and emerging markets on several media outlets. On a personal note, he is an obstacle race fan, a jazz and blues singer and a part-time standup comedian.

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MAIMUNAH MOHD SHARIF
Under-Secretary-General and Executive Director, UN-Habitat
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Maimunah Mohd Sharif, Executive Director of the United Nations Human Settlements Programme (UN-Habitat), was previously Mayor, City council of Penang Island, Malaysia. Appointed President of the Municipal Council of Seberang Perai in 2011, she led the Council to achieve its vision of a ‘cleaner, greener, safer and healthier place to work, live, invest and play’. Sharif began her career as a Town Planner at the Municipal Council of Penang Island in 1985 and became Director of Planning and Development in 2003. She holds a Bachelor of Science in Town Planning Studies from the University of Wales Institute of Science and Technology, UK, and a Master of Science in Planning Studies from Malaysia Science University.

PROF. HISHAM MORTADA
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Hisham Mortada is a Full Professor of Architecture at King Abdul Aziz University, Jeddah, Saudi Arabia. He is also an adjunct professor at Freie Universität, Berlin, Germany, and an academic advisor to academic institutions in Argentina, Italy and Ethiopia. He holds a PhD in Architecture from University of Edinburgh, UK, and Masters of Architecture from Pennsylvania State University, US. He has widely published in the areas of traditional architecture, old Muslim cities, sustainability and urban renewal. Mortada has carried out several international research and professional projects in the Middle East, Africa, Europe and Americas. He has also lectured in more than 30 countries.

PROF. STEPHEN NAYLOR
Chair of Academic Board, James Cook University
Townsville, Australia

Stephen Naylor is currently the chair of the Academic Board of James Cook University Australia. He has been an active participant in education, learning, teaching and the creative arts for 40 years. His creative arts background drove his professional practice, and more recently his research has focused upon design, spatial dialectics and the understanding of a sense of place within tropical regions. He is currently preparing for a new Routledge monograph entitled ‘The Venice Biennale and the Asia-Pacific in the Global Art World: exploring how geopolitics, national agendas and international arts diplomacy compete for space with contemporary artists, critics, international commentators and the public audience.’

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TIM STONOR
Managing Director, Space Syntax
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Tim Stonor is an architect and urban planner who has devoted his career to the analysis and design of human behaviour patterns — the ways in which people move, interact and transact in buildings and urban places. He is an internationally recognised expert in the design of spatial layouts and, in particular, the role of space in the generation of social, economic and environmental value. Stonor is the Managing Director of Space Syntax, an urban planning and design company created at University College London in 1989 to develop and apply predictive design technologies. He is a Director of The Academy of Urbanism, a Visiting Professor at The Bartlett School of Architecture, University College London, a Harvard Loeb Fellow and Deputy Chair of the UK Design Council.

MARIA VASSILAKOU
Deputy Mayor and Executive City Councillor
Vienna, Austria

Maria Vassilakou started her political career as Secretary General of the Austrian Students’ Union. In November 1996 she became Member of the Vienna Provincial Parliament. From November 2010 until July 2019 she served as Deputy Mayor of Vienna and Executive City Councillor for Urban Planning, Traffic & Transport, Climate Protection, Energy and Public Participation. She is also the first Executive City Councillor with a migration background. She was born in Greece and migrated to Austria as a student in the mid ’80s. She studied Linguistics and Psychology at the University of Vienna (Magister degree, 1994) and acquired an MSc degree (2019) from the London School of Economics (LSE Cities Programme). In her nine years serving as Deputy Mayor she was responsible for a vast transformation agenda comprising numerous innovative projects.
In an era where the public has greater access to information than ever before, why is it that social capital in many communities is so divided and diminished? Traditionally people have experienced and generated social capital through direct contact with families and social spaces, including neighbourhoods, communities, clubs and the workplace. Nowadays, many relationships and networks operate at a global level and in cyber-space — enabled through technology and screen-mediated interactions. While there are many benefits to contemporary technologies and innovations, including new forms of sociability, these same developments have also resulted in a loss of sociability; a loss of social capital, social cohesion and trust in institutions. Western democratic societies, including Australia, appear to have become open to the exploitation of change and uncertainty in communities, amplified by propagandists and the manipulation of both mainstream and social media; to sow social discord and create fear and uncertainty, including a loss of trust in scientific research originating from universities. It is the trust in knowledge and research that has guided many governments to look beyond political cycles and plan for inclusive, tolerant societies, receptive to population diversity creating unique social assets. It is in this context that the development of new forms of social spaces, including well-designed public buildings, prospectively hold the regeneration of social capital in pursuit of more economically successful and socially cohesive communities. Regional Australia, including the regional city of Townsville, is negotiating this shift.
BUILDING EMPOWERING MEDIA ECOSYSTEMS FOR CITIES

When we envision sustainable urban development, we omit a key element that makes everything possible at the scale required: sustainable media and content. Traditional film and media industries are under the influence of unsound industry logics. Their pursuit of profit, therefore of people’s attention at any cost, has become detrimental to human development. Instead of creating nurtured content, private media owners tend to appeal to the lowest impulses of their audience. Our future lies in cities and urban communities. We have an opportunity to create positive media outlets and responsible media ecosystems under the umbrella of these cities whose purpose will be to reconnect us with life, to empower us as urban citizens, and to inspire us to take part in sustainable development. Media has a duty to reconnect people, serve development and promote diversity and peace. The Cities of Love global initiative is applying innovative media models to the smart and sustainable development of cities. It has started to demonstrate the positive impact when city authorities, businesses, creative professionals and urban citizens come together to celebrate urban life and act for development. Using smart media to help build smart cities, and to engage people towards a better future, is fundamental today. Using social media to spread good news and to help people convey pride and happiness in being together are key contributions to human prosperity. Together, we can give media a completely new role in our societies, and we can create and showcase content that entertains, inspires people and drives sustainable development.

EMMANUEL BENBIHY
Producer, Cities of Love Franchise
Shanghai, China

PROF. TIM HEATH
Chair of Architecture and Urban Design, University of Nottingham
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EVANGELIA PAVLAKI
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Nottingham, United Kingdom

ENHANCING THE IDENTITY OF CITIES THROUGH CREATIVE MEDIA INSTALLATIONS

Globally, cities have experienced unprecedented expansion and transformation during the past 50 years. During this time the public realm’s social value as an instigator of a city’s identity, has witnessed considerable change. Whilst many traditional public spaces have retained their importance and have a strong and positive identity, others have declined in their usefulness and appropriateness for contemporary society. In addition, many new public spaces are striving to establish their own identities and importance for the users of cities. Alongside urban change, the significant growth and central role that technology now plays in not just cities but also the everyday lives of societies offer new opportunities for the creation of digitally-enhanced urban places that can complement successful traditional public spaces. As such, technology can play a key role in the revitalisation of underused spaces, and the design of new public spaces within cities can potentially contribute to the formation of new and positive urban identities. This essay will therefore focus on the role that digital technologies can play in positive place-making within urban contexts. Indeed, the increasing familiarity and acceptance of technology in society presents exciting possibilities for the creation of diverse and varied spectacles within the public realm that can animate public space to create places that can attract and stimulate wider participation. Such urban experiences can be designed to be interactive and inclusive and thereby form part of strategies to foster positive urban identities amongst societies around the world.

PROF. TIM HEATH
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EVANGELIA PAVLAKI
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CHAPTER 3.0
SPACE

LIM TECK YIN
CEO, Sport Singapore
Singapore

LIVING BETTER THROUGH SPORT

The cultural bonds of association that grow from sporting activity can provide social cohesion and help strengthen communities. At a time of shifts in geopolitical order, a proliferation of technology, and population growth, the consideration of spaces for recreation may be timely. Establishing sport and peripheral cultures associated with such recreational or competitive activities can thus make a positive contribution to society through a number of ways, and requires the careful planning and management of spaces to ensure citizens can access its benefits. This essay explores how Singapore, a city-state with a population of 5.6 million, has been using Sport as a strategy to address such challenges and drive social innovations to achieve positive impact in the physical, social, economic and environmental realms. Through its Vision 2030 masterplan, Singapore has transformed its spaces into living labs to breed innovation, shape mind-sets and inspire Singaporeans from all walks of life to live better through Sport. Building on a bedrock of strategic partnerships with the public, private and people sectors, Sport has been increasingly used as a means to realise national outcomes such as cultivating a culture of care, strengthening cohesion in society and building the confidence of its people. Through a thoughtful curation of case studies in this essay, cities around the world can potentially consider and adapt spatial strategies for sports, recreation and well-being that have been employed by Singapore, and position themselves strategically for the future.

TIM STONOR
Managing Director, Space Syntax
London, United Kingdom

THE SCIENCE OF STREET LIFE AND THE REBIRTH OF THE BOULEVARD

Twentieth-century car-based planning led to the fragmentation of towns and cities. New construction was increasingly undertaken in separated enclaves, connected by fast, anti-pedestrian highways. The consequences of fragmented urbanism have been profoundly negative: low levels of physical activity among drivers and, for those unable to afford car travel, social and economic isolation have affected life chances. The physical casualty of this process has been the mixed-use, mixed-mode, slow-speed environment of the urban boulevard. Throughout history, boulevards were the heart of social, economic and cultural productivity. However, modernist planning diminished their performance, repurposing them for fast-moving traffic. In new developments, boulevards were typically not created, with highways and pedestrianised precincts prevailing instead. The direction that cities take — towards highways or boulevards — will determine their competitive strength. In planning future places, urban leaders can learn from the failure of 20th-century sprawl and reintroduce the productive, slow-speed boulevard. As a sophisticated undertaking, this requires careful co-ordination of skills and resources. Fortunately, science can help. Research into the performance of pedestrian-friendly boulevards shows that they are safer, healthier and more valuable. Urban planners can also benefit from the increasing availability of data, along with the improving capabilities of algorithms and mapping platforms. This essay explores the continuing significance of the boulevard and, in doing so, summarises a human-focused science of street life. Speculating that the survival of the urban main street is essential in addressing the climate emergency and delivering the United Nation’s Sustainable Development Goals, it places the boulevard at the heart of an alternative urban future.
LANDSCAPE CITIES

In the context of climate change and biodiversity extinctions, future cities need to be defined less by their buildings and more by their human life-support systems and especially their living landscapes and nature. Such ‘Landscape Cities’ would help reconnect our culture, economy and wellbeing with global biodiversity and the health of the planet. Imagine such a world where cities are defined not by their architecture but by their landscape and ecology. Where species-rich habitats form a connected and colourful web across the city and where every resident, worker and visitor felt immersed within a living and productive environment as soon as they step outdoors. These would be ‘Landscape Cities’, bringing huge benefits to human health and happiness, and to ecological diversity and resilience. In some places their landscape character will derive from the underlying geography and ecology of the place; in other locations the density and scale of the city will require imagined constructed landscapes to define this identity. The city of Bath in the UK represents one model of a Landscape City where the human use and enjoyment of the city has derived from an innovative response to the underlying geology, topography and ecology of the place for over 3000 years. Singapore represents a more contemporary global city where, through careful planning, innovative design and its verdant tropical characteristics, it has assumed a global identity as a City in a Garden. In both situations the cultural identity of each city is intrinsically linked to its inherent landscape and nature, nurtured through conscious planning and design.
TECHNOLOGY

CHAPTER 5.0

Although the world is becoming increasingly more intricate and divergent and technology even more powerful and disruptive, we continue to assume the industrial-era model classroom, ‘sage on stage’ instruction, age-based grade levels, and physical characteristics concerning school reform. Today, the traditional economic model of education stands in the way of 274 million primary school children worldwide who are not learning basic foundational skills necessary to lead productive and healthy lives. Even more troubling, The National Assessment of Educational Progress (U.S.) has stated that students in the U.S. have made little to no gains in math and reading since 2007. This stagnation has been labelled as a ‘lost decade’ for education reform. Despite education technology advancements that have been achieved over the past years, there is a significant gap between the potential of modern education and what many students are actually learning. Furthermore, the education technology agenda today is not process-driven, nor does it focus on enhancing smart pathways of learning and instruction. The main focus remains on data storage and processing power. As a result of such education policy, labour market gaps between high- and low-skill jobs have been widening while unemployment, underemployment, and stagnating disposable incomes have been on the rise. This essay seeks to provide a high-level yet holistic investigation of the root cause of the current dissonance between education systems and labour markets. Furthermore, the essay will suggest venues worth exploring to ensure the development of future smart communities in which technological advancement-led productivity serves as a lever for citizen life quality.

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DESIGNING EMERGENT FUTURES FOR PRODUCTIVE CITIES

Humans have changed interactions at a planetary scale, which is already producing unanticipated consequences in the climate, natural systems, and human-made infrastructure. Design is the power that gives humans the ability to shape environments and create technology. The artisans that used to work and live in the same place in medieval villages saw how machines dramatically transformed production processes, hence the design practice itself. More recently, digital technologies have changed almost everything we do by combining ones and zeros, codifying messages, videos, photos, tweets, bank transfers and physical objects, and transforming design again. With the combination of physical and digital realities, design plays a fundamental role in changing how we live, work and play in cities. But cities are still responding to the digital age and the Smart City narrative. New trends in urbanism point towards big data, the internet of things, and new forms of control. However, there is a piece of the digital game that has not been looked at closely enough that is cheaper to move around the world. This essay will explore the notion of digital fabrication operating on an urban scale, and how cities could gain the capacity to produce (on-demand) any product or tool using local supply chains, to recalibrate the global economy. Designing emergent futures for productive cities means enabling processes in which urbanisation can become restorative, regenerative and productive in order to keep atoms at the city level, and move bits globally.
THE RISE OF THE DIGITAL ECONOMY AND ITS IMPACT ON THE SMART CITY

Oceans cover 71% of the earth’s surface; deserts cover approximately 20% and cities only cover 3% of our planet (CIESIN, 2004). Yet since 2007, half of the world’s population have been living in cities (UN, 2008). This number is set to increase to 70% by 2050, as people continue to migrate in belief of the social, economic and cultural prospects that cities seem to offer. The often-seen results of overcrowding, waste, energy and water consumption, pollution, traffic congestion and environmental degradation in cities do little to deter the migratory patterns of citizens seeking better lives. If we want to continue enjoying life in cities, then cities have to become more efficient, sustainable and embrace the benefits of what the digital revolution has to offer. Ultimately, cities have to be both smarter and greener if they are to be transformative of local and global economies. In Songdo, we see a city that seeks to embrace technology as a means of spurring North Asian economic growth. In Bandung, we see a city that taps into the creative consciousness of its citizens to enhance the quality and productivity of the city. In Amsterdam, we see a city that harnesses innovation and the circular economy to be self-sufficient and resilient. From these case studies, we can witness three generations of smart city evolution with unique insights into the inter-relationships between civil society, state, academia and private corporation.

DIGITAL ECONOMIES AND CITY DEVELOPMENT: A PERSPECTIVE FROM AFRICA AND THE MIDDLE EAST

This essay explores the role digital innovation and technologies will play in the economic development of cities across Africa and the Middle East. Based on demographic and market research, the chapter establishes how the narrative on new GDP value creation in Africa and the Middle East is expected to shift from the rural hinterlands to the urban areas. African and Middle Eastern cities are home to young, well-educated and upwardly-mobile populations that have a high affinity for digital technology. Already, the social media engagement in these regions is amongst the highest globally. Apart from citizens, the essay will explore how the two other components of a digital economy — government and business — are gearing up for the digital revolution. Governments in the Middle East have taken the lead in digitising government services but continue to lag global peers. Meanwhile, new digital-only businesses have grown across Africa and the Middle East and in some cases, have defeated global peers. This essay identifies the core elements of a complete digital ecosystem and summarises the work needed to seize the digital-innovation opportunity for cities in Africa and the Middle East. While there are challenges of scale in these regions due to the number and disparity of countries, the article concludes by recommending five action areas cities and regional governments must focus on to set up the impending digital opportunity: ICT infrastructure; smart city infrastructure; digital government services; digital talent; and digital policy.

CHAPTER 6.0

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