INTELLIGENT BUILDINGS GROUP

Newsletter Summer 2018

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" An intelligent building is one that is responsive to the requirements of occupants, organisations and society. It is sustainable in terms of energy and water consumptions besides being lowly polluting in terms of emissions and waste: healthy in terms of well-being for the people living and working within it; and functional according to the user needs **"**

Clements-Croome (2010)

The group can be joined (for free) by sending email to groups@cibse.org or alternatively to Eva D'souza, the Group Secretary at Eva.DSouza@jacobs.com

THE DARK GREEN CITY: INFLUENCE OF ADVANCED TECHNOLOGY ON CITIES & SOCIETIES

Smart urban technology has the potential to transform our cities — but watch out for unintended consequences, warns Mark Bessoudo.

What would cities look like if they were built from scratch, from the internet up? This is the question being asked by Sidewalk Labs, the urban innovation unit of Google's parent company Alphabet Inc. What's emerging from this thought experiment is a new approach to city-building, one that sees urban districts as platforms for testing and refining technologies that improve quality of life. Sidewalk Labs' mission, it claims, is not to create a city of the future, but to create the future of cities.

This approach demonstrates how cities are on the cusp of a revolution in urban technology driven by sensors, ubiquitous connectivity, artificial intelligence (AI) and advances in digital fabrication and construction. Nowhere is this more apparent than in Toronto, where Sidewalk Labs recently partnered with Waterfront Toronto, a government agency, to create a new kind of neighbourhood. The 12-acre mixed-use district along Lake Ontario aims to be a global benchmark for how an advanced "smart city" can be built from scratch, quickly and effectively, using data-driven technology. If successful, the project would represent one of the most comprehensive models of how data related to just about everything — from traffic congestion to noise to air quality to trash bins — can be used to not only guide a city's ongoing operations, but also teach it to improve itself, continuously and without human intervention. "Technology," Sidewalk Labs insists, "can help create complete communities that are highly interactive and accessible to all, freeing residents from the constraints imposed by the heavy infrastructure and spatial hierarchies of the last century."

"What happens when technology moves beyond lifting genuine constraints and starts freeing us from those things that we should not want to be rid of?"

While this may turn out to be true, it reflects a wider, commonly held assumption: that as technology improves it will always be for the betterment of humanity. Nicholas Carr, a US journalist who writes about the intersection of technology and culture, believes that this narrative of inevitable progress clouds our real relationship with technology. What we take as incremental improvements in our everyday lives may in fact obscure more nuanced and ambiguous changes.

BY MARK BESSOUDO

Mark Bessoudo is research manager and sustainability consultant in Toronto. He is also founder of platoforplumbers.com

What happens, he asks, when technology moves beyond lifting genuine constraints and starts freeing us from those things that we should not want to be rid of? Questions about data privacy and digital governance aside, Carr argues that liabilities associated with some technologies — in particular AI and automation — may become so advanced that they ultimately threaten to impair the conditions required for us to pursue meaningful work and meaningful lives.

As AI improves, it makes work faster and more efficient, and can lower environmental impact. It is estimated that a fully automated factory, without the need for lighting, heating or cooling, could operate using 35% less energy than a conventional one. But the products of its labour also require far fewer workers: that same energy-efficient factory could cut labour costs by 80%. So while the factory of the future may be green, it is also dark.

It's not just physical jobs that AI is poised to take over. It's also begun to encroach on a wide range of activities that demand intellectual judgment, from medicine to law. The rate of this intellectual outsourcing shows no signs of slowing down.

Historically, technology has delivered us with exponential gains in quality of life. The advent of something as novel and powerful as AI has the potential to deliver even more benefits. But it also has the potential to disrupt cities, and entire societies, with unintended consequences. Technology has also always been a double-edged sword; only now, the blade has become that much sharper.

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IT'S TIME FOR LANDLORDS TO
GET SMART

If you are a landlord, your traditional role in the property market will soon change. You will increasingly be expected to build, operate and curate homes and offices that provide a host of smart digital services – from environmental sensing to entry controlled by facial recognition. Why? Because this is what people want.

You only have to look to other sectors to see how consumers' demands are changing. Take banking, for example. Once upon a time, high-street banks competed only with each other for a slice of the market – and all offered broadly similar services. Today, they face competition from digital technology that offers an improved experience. You can send money easily by email using PayPal, and you can even do all your banking from your smartphone with Monzo.

People want their homes and workplaces to function like this too. Why wouldn't they? We spend 90 per cent of our time inside buildings so it makes sense that we want them to provide us with the best possible experience. Even small things can make a big difference. Why should I go to the hassle of carrying and presenting a security pass to enter a building when technology is available that could simply recognise my face and let me straight in?

For corporate tenants, digital buildings can help them attract and retain the talent they need. Digital also offers a flexible solution where tenants pay just for the time they use workspaces.

This explains why large corporates are increasingly turning to growing co-working space providers such as WeWork, which now counts around 22 per cent of the Fortune 500 among its members, including HSBC, General Motors and Microsoft.

The challenge that the likes of WeWork pose to traditional landlords can also be an opportunity for them. Leases for data-enabled buildings attract a premium, and there is potential to sell a range of value-added services.

For instance, landlords could give commercial tenants the option of paying extra to access sensor data via an app that told them exactly how well they were using the space they were paying for – helping them to configure office layouts. Residential tenants might be offered, for a small premium, access to an app through which they can control every aspect of their home.

Much of this is technologically possible now. Tenants and occupants are already asking for it. All that remains is for landlords to provide it – before someone beats them to it.

BY MATTHEW MARSON

**Matthew Marson is Head of Smart Buildings at the engineering design consultancy, WSP**

KEY PUBLICATIONS

SICK BUILDING SYNDROME: ARE WE DOING ENOUGH?

Health and well-being are vitally important aspects of people centric building design and are the roots of productivity. Sick building syndrome (SBS) is a collection of factors that can negatively affect physical health in several ways. Besides physical health is also related to psychological well-being because the human body is one interactive biological system. This paper focuses on reviewing the current state of knowledge on building sickness syndrome which has been prevalent as a building illness since the 1970s especially in offices and schools. While the concepts of intelligent, smart and sustainable buildings have gained considerable attention during recent decades, there is now increasing attention being given to designing healthy buildings. This study provides a review about SBS symptoms. Several negative effects of SBS are identified and potential solutions are advocated. Finally, the study stresses the role of built environment and concludes that ongoing research towards tackling SBS and developing healthy indoor environments should not be limited to a single formula as any health-related building design approach is dependent on several interacting factors.
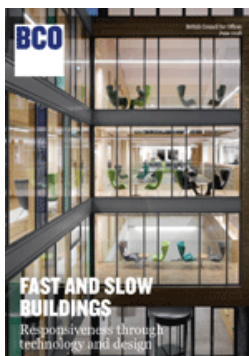
FAST AND SLOW BUILDINGS

There is currently a rapid rise in artificial intelligence and machine learning driven by many industries seeking to automate their activities. This is leading to a heightened interest in buildings that are more responsive to the external and internal environment, the people within and their activities. The digital technologies facilitating this are described as 'fast response'.

ENABLING THE DIGITAL WORKSPACE

BCO'S February report, "Enabling the Digital Workspace" examines how the development of the digital workspace will create opportunities for both workers and building managers to use buildings more effectively, and how digital capability will contribute directly to creating a positive customer experience for all building users.
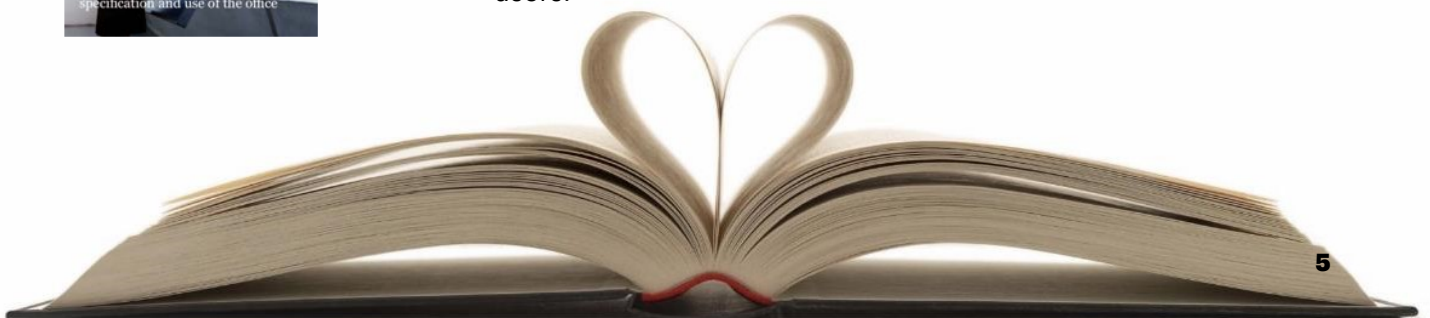
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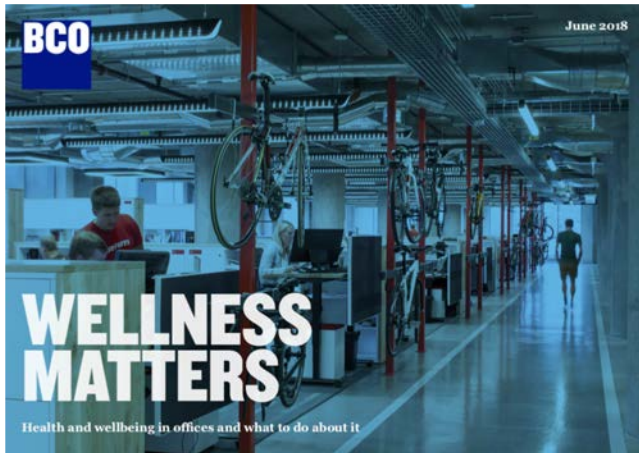
WELLNESS MATTERS

Wellness matters to building owners and operators. Growing awareness of the importance of health & wellbeing amongst prospective tenants and their employees will drive a move towards assets that can confidently demonstrate wellness credentials and effective management of wellness performance indicators. The community of agents, asset managers, investors and developers will need to increase their awareness of wellness to respond effectively to occupant demand.

INTELLIGENT OR SMART CITIES AND BUILDINGS: A CRITICAL EXPOSITION AND A WAY FORWARD

In the last decade, there has been an undoubtedly rising interest in the field of intelligent and smart built environments from design and construction to management, operational and governance perspectives. These recent endeavors, observed at both academic and professional levels, can be classified into city, neighborhood and building scales. In this context, understanding what we really mean by the word intelligent and smart is crucially important. This technical note attempts to clarify and further explore how intelligence differs from smartness in this context. Having intelligence as the main umbrella embracing other interrelated smart subsets is one way of thinking as supported by previous debates, while there are also other lines of thinking with more preference on the smartness as the core concept.
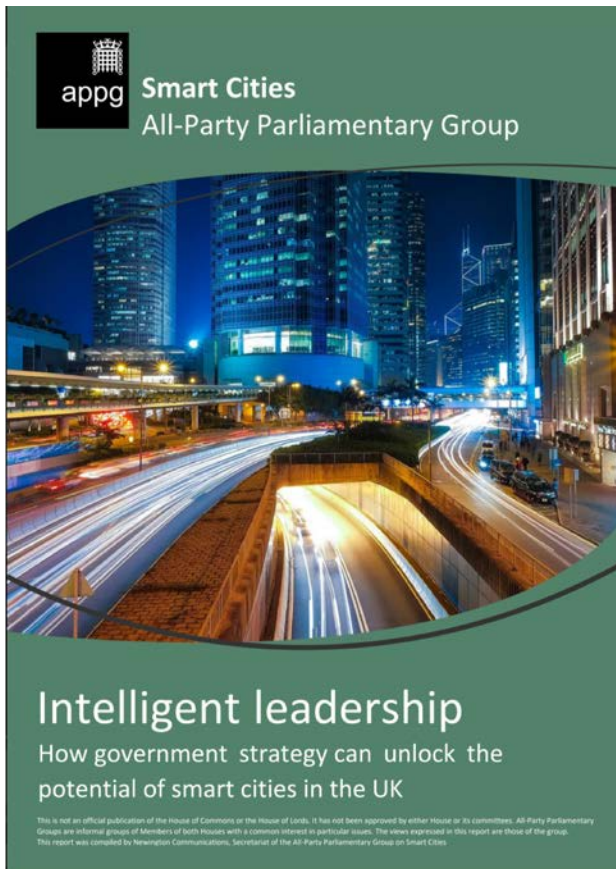

CREATING THE PRODUCTIVE WORKPLACE

Edited by Derek Clements-Croome, Creating the Productive Workplace was launched at an event at Reading University's School of Architecture on 20th June 2018.

KEY
PUBLICATIONS

INTELLIGENT LEADERSHIP HOW GOVERNMENT STRATEGY CAN UNLOCK THE POTENTIAL OF SMART CITIES IN THE UK

This report is the result of an inquiry launched by the All-Party Parliamentary Group on Smart Cities (APPG) at the end of 2017, designed to examine the benefits of developing a UK government strategy on smart cities. Members were invited to submit responses to a call for evidence, from which a number of key themes were highlighted.

This report summarises the findings from the inquiry and makes a set of high level recommendations to government on the role that smart cities can play in solving the biggest challenges facing our cities, and what central government can do to support this. The APPG will then promote these findings to raise the profile of the smart cities agenda, spread understanding of the benefits to citizens of a 'smart' approach, and work with government to deliver the recommendations.

Congratulations goes to Amirhosein Ghaffarianhoseini, Umberto Berardi, Husam AlWaer, Seongju Chang, Edward Halawa, Ali Ghaffarianhoseini & Derek Clements-Croome. Their paper, " What is an intelligent building? Analysis of recent interpretations from an international perspective" (Pages 338-357 | Published online: 07 Oct 2015), was noted as one of the most read papers of the last 10 years and was included in the Special Edition commemorating the 60th Anniversary of Architectural Science Review, which was published in 2017.

Photograph taken on CIBSE IBG Meeting 26th June 2018 at WSP House

NOTABLE
EVENTS

LFA

An event themed around multi-sensory environments was hosted in London the 16th of June 2018.

"Our existence is enlivened every waking moment by a symphony of stimuli from people, objects, building spaces, task interest and Nature. This rich array of inputs to the mind and body generates the multi-sensory experience which can colour and enrich the environment for people to live and work in. Like in music the notes of melodies, harmonies and rhythms magically combine in a myriad ways to inspire the mind so too in multi-sensory design which weaves a tapestry and diversity of experience for people to flourish in. This seminar reviews the research but then shows how multi-sensory design can be achieved in practice to achieve healthy and wellbeing spaces"

Prof. Derek Clements-Croome, Chairperson of the CIBSE Intelligent Buildings Group

BCO showcased its year-long study into health & wellbeing in offices. Following presentation of key findings at the Berlin Conference in May, the research was launched at a seminar in London on 12 June. The event chaired by the incoming BCO president Katrina Kostic Samen and Prof Derek Clements-Croome was a panellist.

The project has adopted a unique approach by creating a strategic 'roadmap' to health & wellbeing in offices. Working with leading medical and academic experts the research has reviewed the existing evidence base of leading sustainability and health & wellbeing standards. The result is an outcome-focused framework against which these standards have been mapped. By doing so the study provides a concise point of reference for clients and their advisors as well as design and construction teams and sets out the best practice guidance for implementing and achieving health & wellbeing across the office life cycle.