

Work&Place

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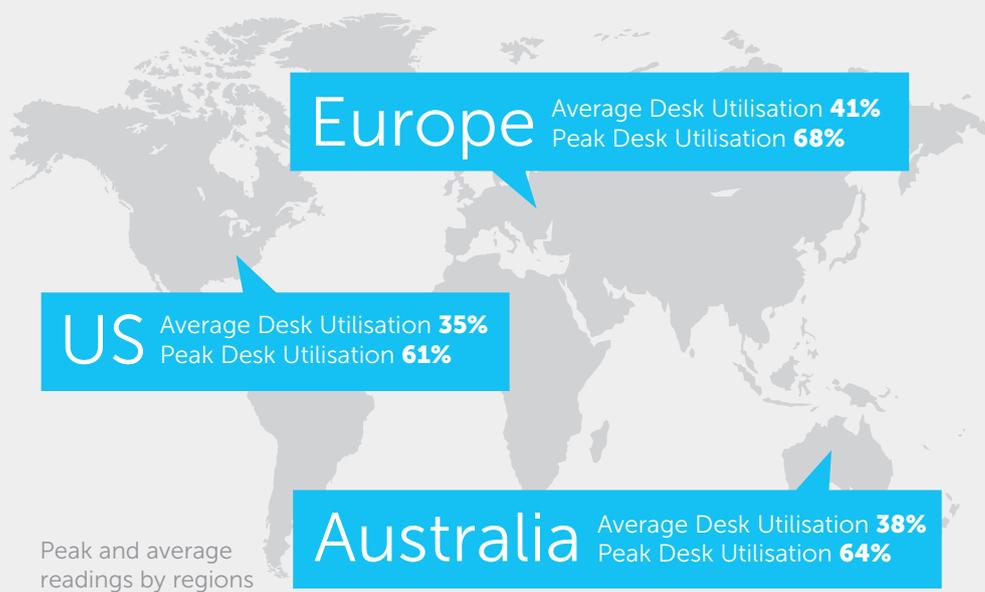
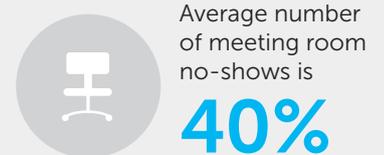
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It's tempting, as each issue of **Work&Place** coalesces, to take a step back and discern if there are any common threads that may be teased out from its material. It's not a temptation that I can easily resist, because often the ideas with which we are presented by our outstanding and knowledgeable contributors are shaped by the forces that guide them in their work, experience and research or emerge unbidden yet fully formed from the sometimes impenetrable fog of modern workplace thought.

So, if there is a theme for this particular issue of **Work&Place** it appears to be the intersection between the different physical and technological spaces which make up the modern workplace. This not only throws up fascinating juxtapositions, topics and ideas and has profound implications for the way we create, manage and inhabit these spaces, it is also eroding many of the old demarcations between professions. As the manager of an office showroom in London told me recently, they are now just as likely to meet with human resource managers as facilities managers when it comes to making decisions about workplace design. No doubt others would say the same of IT managers and those from other disciplines.

The issue is kicked off by **Kerstin Sailer** and colleagues who consider how decisions about workplace design are informed by evidence. I talk to **Chris Kane** and **Chris Moriarty** to uncover the thinking behind The Workplace Conversation initiative which will be reported on fully in the next issue. **Rebecca Booth** looks at new research from Cornell University which considers the leadership response to new working cultures. **Paul Statham** considers how the intersecting physical and technological workplace can be managed worldwide

Elsewhere, **John Blackwell** considers the implications of the changing workplace for IT and property directors. **Paul Robathan** tries to pin down some new definitions for workplace and technology. **Paul Doherty** explores the still emerging world of the smart city. **Christina Bodin Danielsson** explores new leadership models. **Douglas Langmead** takes us on a long commute in the United Arab Emirates. And **Maciej Markowski** thinks that the much derided model of open plan office design needs to be revisited and even rehabilitated.

Of course, none of this is a one way street and you can now join the discussion, with the **Work&Place** contributors, and many others. We hope that you will take up this opportunity, to ask questions, challenge the writers, or to make a related point at our LinkedIn Group, via Twitter, email or even - whatever next? - a phone call.

We look forward to hearing from you.

Mark Eltringham
Managing Editor
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Book review

**Mark Eltringham reviews
Rush Hour, How 500 Million
Commuters Survive the Daily
Journey to Work by Iain
Gately.**

Commuting is one of the most complained about yet least explored facets of our working lives. This is in spite of the fact that it consumes so much of people's time, energy and money, is presented as one of the main arguments for more flexible working practices and is so closely linked to our wellbeing.

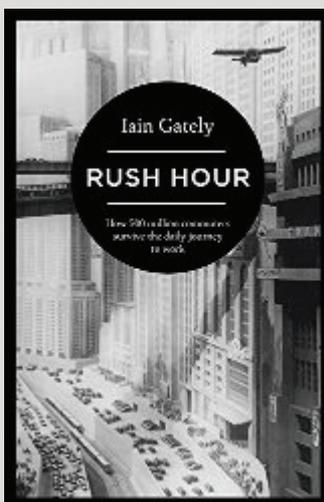
Yet the half a billion - and growing - commuters worldwide could be forgiven for assuming nobody is really that much interested in the effects of their daily grind into work, especially when you consider the attention given to other workplace issues.

Douglas Langmead in his feature on page 32 does his bit to redress this imbalance with a fascinating look at commuting in the rapidly developing and endlessly fascinating economies of the United Arab Emirates.

A broader look at the issue can be found in a book called *Rush Hour* by Iain Gately, which will be published in paperback in June. It begins, as does each day for many of the UK's workers, on a cold station platform in South East England awaiting a train to London. Gately describes how he attempts to distract himself in this mundane situation by observing those around him and teasing out some personal, sociological and anthropological meaning from why they all subject themselves to it and how they manage it in their own ways.

The book offers its own fascinating journey, from a historical description of the rise of public transport and commuting in London through to tales

of how people use their time on trains productively. Even before the rise of the smartphone, Gately suggests, people found ways of making use of their time. He relates a tale of how Albert Einstein in his days as a humble clerk in Bern spent his daily commute pondering the nature of time while gazing at a town hall clock and musing on what was to become *The Theory of Relativity*.



***Rush Hour, How 500 Million
Commuters Survive the Daily Journey
to Work***

Paperback: 384 pages

Publisher: Head of Zeus (4 Jun. 2015)

Language: English

ISBN-10: 1781854084

ISBN-13: 978-1781854082

***Also available in hardback and digital
formats***

Equally colourful is the tale of how city planners in both New York and London spent a great deal of time considering the best way of dealing with the piles of horse manure that piled on the streets as more and more people moved around the burgeoning metropolises in the early 20th Century. The piles of manure may not have reached the heights of nine feet envisioned by these planners but nevertheless public transport did transform the shape of old world cities as those with a great enough income

migrated to their leafy edges and paid to get into work each day, while the poor lived in the centres within walking distance of dockyard and factory.

Gately also considers how commuting has its own cultural peculiarities around the world. Many Asian cities retain a fondness for their tuk-tuks, bicycles and scooters. Indeed the Flying Pigeon, a single gear bicycle may well be the single most successful mode of transport ever devised, most commonly associated in Western minds with hordes of citizens making their way around Beijing. This is not an unfair stereotype according to Gately because at least half a billion of these bikes have been sold since 1950, Deng Xiaoping once defined Chinese national prosperity as "a Pigeon in every house" and many young women would only accept a marriage proposal if their suitor owned at least one.

The book tells a similar tale about the Honda C100 Super Cub scooter, which he claims is the world's most successful motor vehicle and still in production following its introduction in 1958.

Gately is rather less warm when he turns to describing the deprivations of the daily commute for those people routinely packed onto buses and rail and underground carriages in developed cities. He describes such phenomena as temperatures on underground systems that can exceed those deemed acceptable when transporting livestock.

Gately describes the systems introduced on mass transit to deal with hordes of people. The Tokyo Metro famously employs oshiyas, uniformed staff who shove passengers onto the carriages. According to the author, there is an average of seven deaths each day on the Mumbai Suburban Railway. The seats on the Newcastle-upon-Tyne Metro were found to host 190,500 bacterial cells per square centimetre.

The author is pretty upbeat when he concludes that "although commuting is accused of causing a host of problems,



both physical and psychological, including stress, obesity, hyperactivity, impotence and heart disease, by many measures commuters are life's winners. Together, they gather most of its gold, live to ripe old ages and set their children to the best of all starts."

That is not to say however that we should simply accept the problems associated with daily commuting. New research published in the British Medical Journal (<http://www.bmj.com/content/349/bmj.g4887>) claims that people who drive to work are generally less healthy and more overweight than those who get to work in other ways. The report also found that using public transport to commute may be just as beneficial to health as cycling. The report suggests that its results based on long term research with a sample of 16,000 people should have significant implications for Government infrastructure policy, urban design and individual workplace policies. "Policies designed to effect a population-level modal shift to more active modes of work commuting therefore present major opportunities for public health improvement", it concludes.

Meanwhile, a study from Canadian researchers published in the journal Science Direct (<http://www.sciencedirect.com/science/article/pii/S1369847814001107>) claims that the mode of transport also determines how happy we are with the way we get to work. In this regard at least, the car wins out over some forms of public transport. The happiest commuters amongst the sample of 3,400 students and staff at McGill University in Montreal were, in order, walkers (85 percent), rail travellers (84 percent), cyclists (82 percent), drivers (77 percent), metro riders (76 percent), and bus riders (75.5 percent)

Happiness levels were gauged on a

scale that took into account subjects' perceptions of factors such as length of commute, comfort, safety, waiting, privacy and freedom from unwanted attention.

It may be an inevitable fact of life for many people despite the growth of agile working practices, but there's still work to be done on dealing with commuting's deprivations **W&P**

Extremes of work in Japan

Sara Bean on how some Japanese workers are responding to a new world

Earlier this year it was reported that the Japanese Government was considering legislation that would make it a legal requirement for workers to take at least five days' paid holiday a year. This, it should be pointed out, would not mean a change to the Japanese workforce's existing legal entitlement to take 18.5 days paid holiday a year – but rather, force workers to take at least five days off a year. According to the Labour Ministry –very few Japanese workers take their legally entitled leave, using on average only nine days of their allowance..

The Japanese Government has also investigated the phenomenon of banishment rooms which some firms are alleged to have used to exclude unwanted employees. There, it is alleged, workers are forced to spend ten hours a day performing tedious and menial tasks until they decide to leave. It's one, rather cruel way of getting round Japanese employment laws that make it nearly impossible to fire or layoff a single full time employee without overcoming huge legal hurdles.

Holding down a job is seen as an important status symbol in Japan, which offers little in the way of financial benefits for those out of work. Yet despite the robust employment laws, working life has become increasingly uncertain, as short term contracts become more and more commonplace for many people, as is the case in many countries.

Work is so all encompassing for so many Japanese workers that they often appear to manifest some of the most extreme reactions to the challenges of modern life. Two of the most common characteristics of the Japanese response appear to be isolation and exclusion, and the impact on individuals' wellbeing can be devastating, with high numbers of employees falling ill from stress, succumbing to 'karoshi', - death through overwork - or by committing suicide.

Shiho Fukada has explored the dislocation of working life in Japan, including in a remarkable series of images, detailing the rootless lives of so many employees in Japan.

In one image a dark suit jacket hangs by a shaded window, beneath a portrait of a smiling, well-dressed executive. The man is Akira Teranishi, a Japanese executive who killed himself 17 years ago, by leaping from a building in Kyoto.

"The nameless worker, the empty jacket — that could be anybody," Ms. Fukada said.

The picture is from a series she has been working on since 2009, looking at the financial crisis and its effects on Japanese workers.

Now, a new film from Shiho Fukada tells the story of two Japanese men who have taken to living in Internet cafes as they seek to find their way in life. The film explains how Japan creates the perfect storm of forces needed to create these conditions.

The two men in the film are a 26 year old security guard and a depressed older man who resigned from his job to try to seek something better. It appears a laudable alternative to working for a corporate, where, since the recession, the prospect of lifetime employment is no longer a certainty **W&P**

Sara Bean is a freelance writer specialising in HR and FM. A gallery of Shiho Fukada's work can be found at http://lens.blogs.nytimes.com/2013/04/15/japans-rootless-and-restless-workers/?_r=1.

The science of the workplace has gained a lot of interest over the last few years, highlighting recurring patterns of behaviours in organisations, but also how organisational behaviours relate to spatial design and office layout

Kerstin Sailer, Ros Pomeroy & Rosie Haslem

OFFICE DESIGN • FACILITIES MANAGEMENT

Insights from an evidence based design practice

In theory, knowledge from a growing body of research could be used to inform workplace designs. In practice, this is rarely the case. A survey of 420 architects and designers by the Evidence-Based Design Journal (EBD Journal 2014) found that while 80% of respondents agreed more evidence was needed on the impact of design on occupiers, 68% admitted they never reviewed literature and 71% indicated they never engaged in any sort of post-occupancy evaluation (POE). Only 5% undertake a formal POE, and even fewer, just 1% do this in a rigorous fashion. Not a single practitioner reported a repeated second round of analysis of a finalised and occupied design scheme, despite scholars highlighting the importance of a pre- and post-occupancy study setup in order to be able to understand the impact of a design solution (Sailer et al. 2009).

In practice, most workspaces are still based on the experience and intuition of architects and designers, who come up with a design solution with only minimal input from occupiers. While this produces satisfying results in some cases, the bigger picture suggests otherwise. In the latest issue of the Leesman Review (Leesman 2014), only just above half of all respondents (54%) agree that the design of their workplace enables them to work productively, which means that roughly half of the workforce perceives office design as a barrier. Therefore additional insights are needed in to which spatial features support productivity, satisfaction and staff wellbeing.

From more than ten years' experience of analysing behavioural data in workplaces, we know that data sometimes confirms commonly held perceptions and beliefs, but sometimes it can also unearth new views and help to bust a few myths. Intuition does not always get it right. Therefore, the use of data in the design and briefing process substantiates decisions with facts and figures, and enables open discussions between the design team and the occupiers. This mirrors what Jim Barksdale, former CEO of Netscape once said: "If we have data, let's look at data. If all we have are opinions, let's go with mine." (as quoted in: Schmidt and Rosenberg 2014)

“... Most workspaces are still based on the experience and intuition of architects and designers, who come up with a design solution with only minimal input from occupiers...”

Based upon both UCL's research into the science of the workplace and the evidence-based design practice of Spacelab, we have collated ten insights about organisational behaviours, perceptions, cultures and spatial design that might be surprising, new or counterintuitive.

1. The majority of contact in the workplace is unplanned.

In four different companies, across various industries (media, advertising, public sector, legal), unplanned contact was found to be much more prevalent than planned contact. Only 34% of all interaction took place in a planned way, while the vast majority occurred ad-hoc and spontaneously (most often at someone's desk). Sorting things out as and when they arise can improve productivity – the quantification of this effect was

recently labelled 'collisionable hours', i.e. the number of probable interactions per hour, per area (Waber et al. 2014). For workspace design this means we need to focus more on those spaces that allow people to interact with others spontaneously rather than just

design spaces for planned contact.

2. Silence is not golden: the typical interaction rate in a knowledge-intensive business is 34 percent.

Knowledge-intensive work is characterised by a high degree of complexity and interdependency of tasks and job roles. Most of us do not accomplish things on our own, but rather we often rely on colleagues to contribute. This interdependency requires increasing amounts of coordination. Data from observing more than 200,000 instances of behaviour in 17 different organisations shows that on average 34% of all people present in the space are interacting face-to-face at any one point in time. However, interaction rates differ significantly by industry. In software development 46% of people interacting at any one time on average, followed by 39% for both advertising agencies and the financial industry; law firms and media companies were the least chatty with 29% and 27% rates of interaction respectively. This brings considerable challenges to workplace



design, since office chats are also a potential source of noise and disruption.

3. Out of sight, out of mind: daily contact remains within the limits of a floor

In the 1970s, researchers at MIT first established that distance has a strong influence on who we talk to most frequently in the office: those within a reach of around 20 metres (Allen and Fustfeld 1975). Being on a different floor was mentioned, but its impact was not quantified empirically. Our benchmark data on the network structures of 16 organisations (collected via staff surveys) show that daily face-to-face contact remains within the limits of a floor to a staggering degree: on average 78% of ties span between people accommodated on the same floor. In three cases it was even 90% or more. When designing workplaces and choosing the right property, it has to be acknowledged that ‘out of sight’ often means ‘out of mind’ and this can have a significant impact on collaboration efforts and the amount of knowledge sharing in an organisation.

“...Communication in the workplace is still tied to a high degree to physical space and what is more, our patterns of email contact closely mirror face-to-face contact...”

4. Bump into colleagues in the corridor? Not really...

It is often argued that corridors play a big role in fostering interactions. For instance, in an analysis of the famous Bell Labs, where it was purported that “traveling the hall’s length without encountering a number of acquaintances, problems, diversions and ideas was almost impossible. A physicist on his way to lunch in the cafeteria was like a magnet rolling past iron filings.” (Gertner 2012: SR1) Despite commonly held perceptions that interactions tend to take place in corridors, observational data of 24 buildings show that corridors play a minor role, if we account for the area they make up. Mapping face-to-face interactions by location and dividing their numbers by the size of the area provided, only 4% of interactions actually occur in corridors. Almost half of all interactions take place in workspaces, another 38% happen

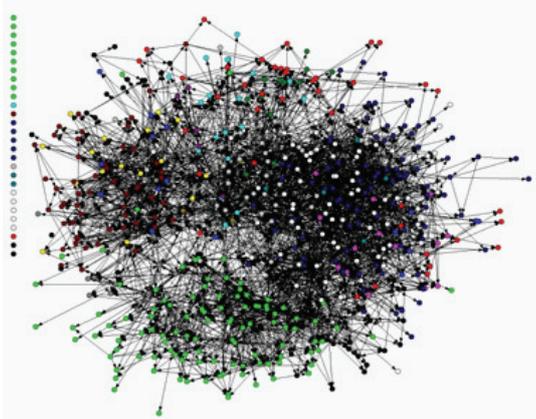
in meeting rooms and only around 9% in shared facilities such as kitchens, tea points, canteens or around the infamous ‘water-cooler’ (Fayard and Weeks 2007). When designing corridors, it seems more important to think about them as paths rather than the place where we actually bump into colleagues, because statistically speaking, we don’t. If those paths are well-designed and lead along crucial interaction spaces and attractors such as break out spaces, meeting rooms and workspaces, however, corridors might afford interactions indirectly by bringing people together elsewhere.

5. Most workplaces are very static

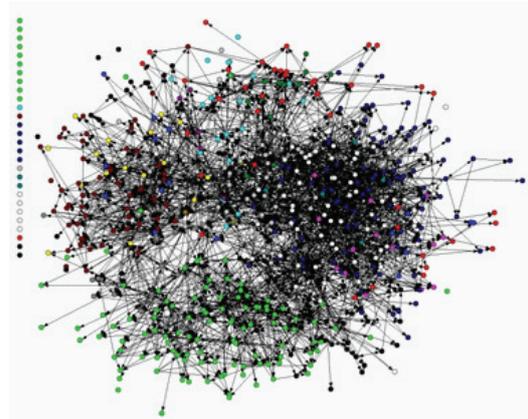
Although knowledge-intensive firms like to see themselves as dynamic and flexible, most workplaces are actually very static. Comparing observations across 24 different buildings show overwhelming evidence of a sedentary work culture. On average, only 6% of people are on the move at any one point in time whilst 85% are sitting. Since standing up and moving around is not only beneficial for health and wellbeing (Nicoll and Zimring 2009), but also generates opportunities for unplanned contact and has shown to increase cognitive capacity (Schaefer et al. 2009), it is important to consider workplace designs that encourage movement.

6. Email overcomes physical distance? Not really...

With the popularity and ubiquity of communication technologies, it is often proposed that physical distance no longer matters, or is even ‘dead’ (Cairncross 1997). However, it can be shown that communication in the workplace is still tied to a high degree to physical space (see point 3 above) and what is more, our patterns of email contact closely mirror face-to-face contact. Studies of network structures in five different organisations revealed a high match (77%-89%) between the networks of face-to-face and email contact. Essentially, we email those people more frequently that we also frequently meet face-to-face. The match between email and unplanned



Network of face-to-face contact in a media company



Network of email contact in a media company

face-to-face contact is higher (83%-89%) than for planned face-to-face contact (77%-84%), which is slightly counterintuitive. We would argue that unplanned contact is spatially driven (more so than planned), so the higher overlap between unplanned and email contact highlights how closely email patterns are tied to physical space.

While all of the above organisations occupied open plan layouts, an additional study of an academic department in a more cellularised environment showed only a 64% overlap between unplanned and email contact (Sailer et al. 2013a); and a study of communication patterns among caregivers (Sailer et al. 2013b) in very cellular traditionally laid out outpatient clinics showed an even lower overlap of 29% (while a different hospital with a more open layout showed 91% overlap, as expected).

Hence it seems that the openness of the layout impacts how closely email contact follows face-to-face contact: in more openly structured workplaces, staff email those they also meet face-to-face often, while more segregated spaces mean emails reach those recipients that are seen less frequently.

7. Desks are occupied only 44 percent of the time, while staff think this is 68 percent

Having observed over 16,000 desks in more than 30 different organisations with a fixed desk for every employee, it can be confirmed that overall desk occupancy is rather low in the average workplace: only 44% of desks are occupied at any one point in time.

The lowest occupancy we have observed was at 27% in a large media company, whereas 58% was the highest occupancy in the case of a creative agency. What is more interesting is the fact that in most cases people grossly overestimate the time they spend at their desk. Perceived occupancy (collected through staff surveys) is 68% on average – typically 25%-30% higher than actual occupancy figures.

In the case of a creative agency of 500 staff, the gap between actual and perceived occupancy was a stunning 54%, since people believed they would be at their desk for 88% of the time, while in fact they only spent 34% of their day at their desk. Activity Based Working with more shared facilities and a reduced staff-to-desk-ratio is an obvious solution for a workplace with very low desk occupancy figures, however, this has to fit the culture and vision of an organisation, and

additionally, behaviour change from a fixed desk to flexible working can be difficult to achieve.

8. Meeting rooms are always booked? Not really...

A similar picture of overall underutilisation presents itself with the occupancy of meeting rooms. across a range of office types. Despite the often heard complaint from people in organisations that meeting rooms are difficult to book, average meeting room occupancy across 24 organisations showed a utilisation rate of only 38%. Reasons for the mismatch between perceptions of staff and factual usage often lie in bookings that don't take place at all or are shorter than anticipated and the popularity of certain preferred time slots for meetings (10-12 and 2-4pm).

9. Space supports concentrated work? It's complicated...

With a strong focus on supporting collaboration and communication, the role of concentration is often overlooked in organisations. Only recently has the question

“... Despite the often heard complaint from people that meeting rooms are difficult to book, average meeting room occupancy across 24 organisations showed a utilisation rate of only 38 percent ...”

of concentration, distractions, noise and privacy received more attention (Steelcase 2015). What we have found in our occupancy studies highlights the important nuances in workspaces supporting concentrated work. Drawing on staff surveys in five organisations and based on more than 2,000 responses, we found that 35% of people strongly agree or agree that their workspace supports concentrated and silent work, while on average 41% disagree or strongly disagree. This highlights that on average more staff consider concentration difficult to achieve, but the overall picture is relatively balanced. For this particular question, the case-by-case differences are insightful: while staff in three of the five organisations agreed rather than disagreed that spaces supported concentration,

the two other cases indicated significant difficulties. The most extreme situation was found in a media company, where only 12% of staff saw concentration supported, while 61% reported concentration and quiet work was not possible. Workplace design clearly has to find solutions to balance the trend for more communication with the needs of people to concentrate, put their heads down and find silence to get their jobs done.

10. Space represents organisational identity? Not really...

Workspaces that suit an organisation's culture and identity can be a powerful communicator of brand values. Google is the most widely known example of a workplace incorporating strong aspects of the company ethos into the built environment. However, Google seems to be the exception rather than the norm. Studies in four different organisations highlighted the fact that most organisations have a long way to go: on average only 11-15% of staff strongly agreed that their workplace reflected the identity of the company. The vast majority reported that their space was bland, neutral and faceless. Asked in interviews whether any aspect of the space represented what the company stood for, most stakeholders had no answer to this. The lesson to be learnt for workplace design is not necessarily to copy the Google slide, but to find spatial expressions of their very own culture and brand values.

Conclusions

This article has highlighted a plethora of facts and figures around workplaces and organisational behaviours. If collected systematically and rigorously in advance of a workplace project, this data can be used to inform office design and find better solutions for organisations, where space matches needs, cultures and workflows of staff, and supports strategic business objectives. Evidence-based design is an important emerging practice, which slowly appears to change the way workplaces are conceptualised, created and delivered. With growing datasets available, increasingly rich patterns are revealed that begin to develop predictive powers. Still it has to be kept in mind that often insights are context bound and cases can be unique. This means results are not generalisable all that easily, and careful considerations as well as due diligence is needed in evidence-based design practices. **W&P**

i Kerstin Sailer

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Introducing The Workplace Conversation

While many people have long expressed their regret at the silos that exist between the key workplace professions, it's only been a year since the first public soundings of the ideas behind a new initiative to eradicate them once and for all. At last year's ThinkFM conference the heads of the UK's main professional bodies for HR and FM announced that the British Institute of Facilities Management would be collaborating with the Chartered Institute of Personnel and Development to explore how both communities could share knowledge on the changing workplace. It marked the end of a conference which began with a talk by Peter Cheese, the CEO of the CIPD, who remarked that both professions were in the business of getting the most of people in the working environment and why it is vital that those tasked with managing these key resources within organisations need to work together to maximise the value of its workforce.

Earlier this year, the first details were announced of the first initiative to grow from this joint commitment. In February, the BIFM and CIPD launched a joint project to examine the evolution of the working environment and the future of work. The Workplace Conversation project builds on the agreement made between the two bodies to collaborate on ways the 'custodians of two of the most important drivers of business performance – people and place' could build bridges between the two disciplines.

The idea behind The Workplace Conversation is powerful and simple. Its first stage was to invite FM and HR professionals, as well as anyone with an interest in the future of the workplace, to participate at the Workplace Conversation website. The 3 month initial stage of the project, now at an end, invited participants to take part in online conversations to 'draw insights, ideas and practical solutions from individuals across a range of countries. Participants will be set specific tasks throughout the duration; the outcome of which will lead to a user-submitted idea, selected by the community, being voted as

“...Unless the workplace strategy sector embraces change and builds bridges between the 'people' side of the business and the 'place' side, their industry will become as dead as a dodo...”

the best idea to 'create better workplaces in the future'.

We are now entering the second stage when the results of this process are examined and reported on. The initial findings will be reported in the next issue of this journal but there is still the chance to be involved online. Many of the initial contributions to the project can be found at <https://workplaceconversation.com/> and updates are regularly available by following the hashtag #twpc on Twitter. The insights from the project are already profound and interesting even before the initial report is published.

Two of the people driving the project are Chris Kane of Chris Kane Associates and Chris Moriarty who is Head of Insight and Corporate Affairs at BIFM. Chris Kane has a longstanding interest in the idea of bridging the traditional and increasingly irrelevant divide between workplace professionals. Writing in this journal last year, he said: *'The world of work is changing rapidly and profoundly in a way that we haven't seen since the industrial*

revolution. Yet even as we stand at a momentous, game-changing inflexion point, the 21st century workplace strategy sector is still dithering about whether to join in the revolution. They are like the industrial mill owners of 19th century England who adopted a 'make do and mend' approach to business and failed to invest in new technology only to be forced out of business by foreign competitors who had invested in radical new, state of the art technology.

Unless the workplace strategy sector embraces change and builds bridges between the 'people' side of the business and the 'place' side with other workplace specialists, their industry will become as dead as a dodo. Workplace strategy needs to become more than just a tool to improve efficiency and thereby reduce property costs. It has to change its mind-set and embrace the notion that they exist not to manage cost centres, but to drive value for the whole business by creating a physical workplace that enables the next generation workforce to work in an agile productive way. Creating communities of common interest will do more to generate value than building showpiece warehouses to house departmental silos' W&P

The ability to respond to change is one of the most widely cited prerequisites for success in the modern business world. When it comes to implementing change it's worth remembering that culture eats strategy for lunch

Rebecca Booth

LEADERSHIP • MANAGEMENT

A culture oriented approach to change leadership

Today's organizations are in constant flux with continual pressure to evolve. Whether the demand originates from organizational restructuring, technological adaptation, competitive pressures, economic constraints, environmental or productivity improvements, it affects people and the built environment. Only about half of transformation initiatives accomplish and sustain their goals, according to a survey on Culture and Change Management by the Katzenbach Center. Among the biggest obstacles to successful change leadership is "change fatigue"¹, which is marked by empathy and failure to engage in the change agenda. These barriers pose a challenging arena for a leader to motivate change and maintain the momentum needed to meet the business goals of the organization. Change leaders are in need of methods to inspire support and energize stakeholder commitment to improve the success of change implementation. Leveraging culture to provide a sense of affiliation, motivate commitment and to exist as a basis in formulating the vision has powerful potential to improve the success of change implementation.

“...Among the biggest obstacles to successful change leadership is “change fatigue”, which is marked by empathy and failure to engage in the change agenda...”

Change management or change leadership?

Change Management is focused on the structure, order, efficiency and control of the initiative with an emphasis on timeliness, budget, and encouraging people to adapt to smaller scale change. Alternately, Change Leadership, empowers action that inspires change on a larger scale by motivating people to work as a unit throughout the process to define a vision and shape the transformation collaboratively. There is improved risk tolerance when engaging to Change Leadership because of the energized approach and holistic nature of the process versus the traditional Change Management approach.

There are four fundamental phases to Change Leadership that are vital to the success of any managed change initiative which include:

1. Inspire Change
2. Develop an Agenda

3. Facilitate Support & Maintain Support
4. Implement the Initiative

Phase I: Inspiring change

The first phase of change leadership involves evaluating the arenas for action within your organization, by initially identifying areas in which improvements can be made to optimize efficiency or performance and secondly, focusing on the gaps or opportunities to enable organizational members to understand and accept change as a benefit. Assessing the change environment of your organization and understanding the nature of your organization is beneficial in creating an agenda that inspires acceptance for change. Developing an awareness of the pace, patterns, limitations and capacity to embrace

change is instrumental in the development of a successful agenda. Commitment to the change agenda is further strengthened by conveying a concept of the optimized future state of performance or efficiency. Companies that are the most effective at change

implementation are 4.5 times as likely to involve change and internal communication professionals at the earliest stage of planning - when they are identifying the problem or opportunity.²

Phase II Developing an agenda

One of the most-accepted ways to facilitate support for the agenda is to create a vision. A vision is a stable identity that is tied to values and purpose, which connects to the bigger picture of the organization's goals. A well-crafted vision engages members to achieve a common goal through a shared sense of purpose and exists as the foundation of reasoning behind the agenda.

How does culture leverage change? Culture is the very mechanism by which you motivate people to commit, to identify, and to integrate with the organization³. A recent study from PWC highlights the need for a more culture-oriented approach to change. The findings also suggest strong correlations between the success of change programs and whether or not culture was leveraged in the change process.⁴ Organizational culture

is strongly influenced by core values and vision because they represent the guiding principles and manner in which the mission is achieved. PWC concludes that cultural levers were at least twice as likely to have played a role in change management that had succeeded⁵. One way that culture can be leveraged to effectuate change is to model solutions that reflect key attributes of the organization's core values and vision. The chart below lists some common core values, their attributes, the behaviors they motivate and a few associated solutions.

1. Defining organizational core values
2. Understanding associated attributes that support the business strategy
3. Determine what motivates that behavior
4. Orienting solution to align and support the attributes and behaviors

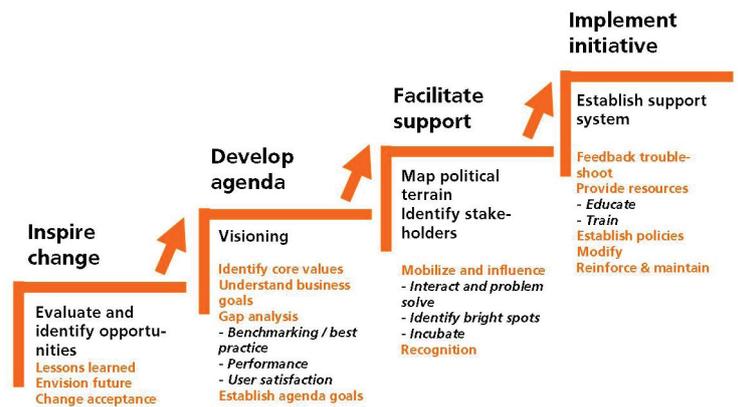
Conducting a Gap Analysis to highlight opportunities in which performance or efficiency can be improved offers an approach to goal establishment. Referencing industry standards through best practices or benchmarking provides a basis of comparison to assess the current performance relative to standards or expectations. Evaluating assessments of key performance indicators such as cost effectiveness, HR performance appraisals, customer satisfaction surveys and job satisfaction surveys can identify opportunities for improvement. These methods of evaluation enable the organizations to better, define goals, allocate resources, set clear expectations and attain tangible and measurable results.

Phase III: Facilitating and maintaining support

An effective way to facilitate support and build momentum is to create a problem-solving culture. People have a need to affiliate, as well as a desire to solve problems and receive recognition for their efforts and accomplishments. Change, when led by an emphasis on affiliation and collective interest, can help sustain a culture of motivation that provides mutual benefits to the individual as well as the organization. A leader that approaches problem-solving with an intent to influence rather than control enables people to mobilize around ideas that build momentum. An example of this approach would be to define the desired outcome, suggest a path and allow a group to suggest alternatives courses of action to meet the same objective. This approach is an effective way of using the directive leadership style to define objectives balanced with facilitative leadership that encourages autonomy, develops ownership and increases the likelihood of buy-in. Mobilizing support by communicating the common vision and reiterating the benefits is essential to influencing stakeholder support and sustaining the agenda's momentum.⁶

Phase IV: Implementing the initiative

Implementing the initiative entails developing a roadmap for change and requires an action plan and timeline of events. A leader must introduce a support system to establish a continuous feedback loop of communication that informs end-users or fields questions throughout the change implementation. This is best accomplished through the use of project websites, newsletters or town hall meetings. The feedback system can function in a way that informs the need to modify or adjust the change agenda, action plan, or schedule of implementation. The



communication channel is a collaborative way to develop and establish guidelines, policies and behavioral protocols that require reform as change evolves. The next component of establishing a support system is providing resources to train or educate end-users to anticipate adjustments and adapt to new ways or behaviors. Maintaining commitment to stay on course requires constant cultivation, guidance, and management. It is a sustained process of influencing, adjusting, and reinforcing the goals and objectives of the vision⁷. The final step of implementation involves measuring the impact and success of change implementation by identifying results realized in key performance indicators. This final step is invaluable in evaluating the effectiveness of change implementation and formulating strategies for future agendas.

Conclusion

Leveraging culture as a method to inspire and motivate the support of change implementation is representative of a dynamic and promising approach to improving the success of change implementation. As the well-known quote, attributed to Peter Drucker states, "Culture eats strategy for lunch" **W&P**

i Rebecca Booth

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The converging worlds of technology, corporate real estate, office design, human resources and facilities management are an inevitable and solution driven response to the growth of agile working practices

Paul Statham

CORPORATE REAL ESTATE • FACILITIES MANAGEMENT

Agile working transforms business on a global scale

Firms have always had concerns about the efficient use of their offices, and for good reason. After staff, real estate is their most expensive and valuable asset. Twenty or more years ago, before the Internet began to unravel the bonds that tied us full time to the workplace, this was a fairly straightforward issue. Up until the mid 1990s, most people had fixed hours in one place of work and a dedicated workstation, the size of which was often determined by their status within the organisation rather than anything else. Even those workers who spent large amounts of time away from the office usually had their own desk to call home.

In the mid 1990s, that started to change. Not only did the uptake of the Internet and the adoption of mobile phones and laptops allow staff to work from anywhere, there was growing awareness of exactly how they used space within the office itself. Pioneers such as Frank Duffy and his firm DEGW began to measure how much time people spent at their desks over the course of the day and began to posit alternatives to dedicated workstations.

For the first time, the workplace was seen as a cluster of settings through which people moved depending on what they were doing. As a result the office was treated as the stage rather than the play. New desk sharing practices such as hot desking, hotelling were increasingly adopted and in their wake trailed new conceptions of the office as a club, which people visited, booked and used as they would a public space.

A quarter of a century on, such radical ideas are now mainstream and we not only enjoy nearly three decades of accumulated wisdom and sophistication but also now have the tools to measure and manage the way we use the workplace in real time. This not only helps firms to keep down costs and better manage their real estate it also creates workplaces that are better able to serve the people that use them and adapt to new technologies and working practices.

One of the more intriguing characteristics of the implementation of new approaches to how people work and

how organisations own and use physical and digital space is how it plays out across different sectors and different regions. There are complex forces at work here which mean that while individuals and employers encounter what are intrinsically the same recessionary, commercial and technological factors regardless of where they work, they are also addressing them within a specific cultural, social, economic and legislative context. So how they play out can vary significantly.

A changing focus for property worldwide

A complex debate has grown up around the way in which organisations use commercial property, not least when it comes to implementing more agile and collaborative forms of working. The major complicating factor is how to square off a

relatively fixed resource like a building with the demands of its occupants, which can change from day to day. Add in the need to keep costs down and you are left with a heady mix that drives organisations to get more out of their assets, not just cut costs. It all begins with a greater understanding

of how your asset is used and the identification of those opportunities to get more from it.

The office itself is an obvious target for this kind of approach. According to the British Council for Offices, the UK spent an estimated £28.5 billion on offices in 2012 – outstripping business expenditure on legal services (£24.3bn), accounting (£14bn) and insurance services (£23.8bn). Yet despite this, nearly three fifths (57 per cent) of 250 senior executives from large organisations in a poll carried out by the Centre for Economics and Business Research (Cebr) and Populus found that property issues are still not regularly discussed in the boardroom and responsibility for property is still likely to fall outside management teams.

The research found businesses take a very cost-centric view towards the workplace. Although almost three-quarters of organisations were constantly analysing and assessing whether their space is being used efficiently, cost was still

“...For the first time, the workplace became a cluster of settings through which people moved depending on what they were doing. As a result the office was treated as the stage rather than the play...”



found to be the most important factor in assessing the office's performance (73 per cent)¹.

With 68 per cent of organisations surveyed likely to review how their office space is used in response to organisational growth and change, the British Council for Offices in its report argued that there is now a significant opportunity for businesses to use their property to bring significant benefits to their overall performance.

Many are already seizing the initiative, as is shown by the sharp reduction in the amount of office space used by corporate occupiers as they adopt more agile working practices. An October 2014 study from facilities management services provider MITIE² found that between the years of 2008 and 2014 firms reduced their floor space by an average of 45 per cent. The results of the report, based on interviews with property directors, mirror those of the Occupier Density Survey³ published by the BCO, which also found a marked reduction.

The authors of the MITIE report conclude that the economic downturn has been the main catalyst for the reduction in property used by occupiers. The main way firms have accommodated the fall is with the uptake of agile working practices, the changing role of the corporate HQ as a 'mother ship' for client facing activities and collaborative work and a closer working relationship between IT, FM and HR to accommodate more agile working.

Of course the UK is not alone in responding to the forces at work here. According to CoreNet Global worldwide office space standards are now moving closer to the norm seen in the UK. In late 2013, the average amount of space per office worker globally had dropped to 150 sq. ft (14 sq. m.), from 225 sq. ft. (21 sq. m.). CoreNet also reports that with increasing employment levels, there is scope for a 'property paradox' in which more workers are using less individual space and more shared space for collaborative working. Just over half of the respondents to the survey predict that an average of 100 sq. ft. or less per worker as the norm in five years.

“... Many are already seizing the initiative, as is shown by the sharp reduction in the amount of office space used by corporate occupiers as they adopt more agile working practice...”

In 2014, CoreNet Global published a report with property consultancy Cushman and Wakefield called the Workplace Transformation Survey, which explored some of the consequences of these changes⁴. The report is based on a questionnaire of over 500 occupiers and other participants from around the world taking part in events in Los Angeles, Amsterdam and Shanghai. It found that nearly two thirds of respondents claim that their organisations are either in the process of implementing a workplace change programme (35-40 per cent) or planning to implement one (25-27 per cent).

The growth of agile working

Even before the UK Government extended the right of all employees to request flexible working in July 2014, the uptake of agile working practices had been profound. In 2014, the Office for National Statistics released new figures, which show that flexible working is at a record high in the UK⁵. The headline figure from the ONS is that 14 per cent of the workforce now either work at home full time (5 per cent) or use their home as a base (8.9 per cent). This represents a 1.3 million increase over the six years since the onset of the recession yet it is only a small part of the overall picture because it does not take into account our new relationship with work. For example, a 2014 study from the Institute of Leadership and Management⁶ found that nearly half of managers work an extra day each week outside of their contracted hours, while an eighth put in an extra two days. More than 90 per cent of managers now work outside normal office hours, over three quarters (76 per cent) 'routinely' work at home or stay late at work, over a third work at weekends and nearly half (48 per cent) regularly work through their lunch-break.

Again, this pattern of increasingly agile working practices is repeated across the world. In Singapore, the Ministry of Manpower released figures at the end of 2014⁷ that claim around half (47 per cent) of firms offer employees at least one formal flexible working arrangement, up from 38 per cent



in 2011. Australia has introduced its own legislation offering certain workers the right to request flexible working. The US does not offer workers such rights but interest remains very high. The Alfred P. Sloan Foundation's Workplace, Work Force, and Working Families Program found that nearly 80 percent of American workers want more flexibility at work and has set itself the goal of promoting agile working as the default working practice in the US⁸.

This in turn is changing the places we work. Serviced offices and co-working spaces are flourishing and hotels are joining cafes as the providers of impromptu workspaces for the new army of peripatetic workers. A study by the German Fraunhofer Institute⁹ has found that hotels are significantly increasing the amount of working and meeting space they provide in their facilities in cities across Europe with three quarters of British employees saying they work while staying or waiting in a hotel.

Example 1: The UK Public Sector Estate

The UK's public sector has been one of the first to seize on the opportunity offered by agile working to reshape its property. Since 2010, Central Government has sold off some £1 billion of what it consider underutilised space and is encouraging departments to share offices. For example, the Department for Communities and Local Government (DCLG) has now moved in to share its offices with the Home Office in Westminster. The department's former home will now be redeveloped into commercial property and retail space. A report from the National Audit Office claims the DCLG move will save taxpayers an estimated £220m over the remaining lifetime of the current private finance initiative contract.

The same thinking is being applied at local authority level too. Earlier in 2014, the government announced that it was to extend its groundbreaking One Public Estate scheme¹⁰ that aims to divest and consolidate government-owned land and property to cut public sector spending and boost economic growth and regeneration. The government claims the initial phase of the scheme, announced in 2013, would save £21m in running costs and £88m in capital receipts, generate around £40m for local economies and create an estimated 5,500 jobs and 7,500 homes over the next five years. Cabinet Office minister Francis Maude claimed the scheme would free up buildings in addition to the 1,250 that the government has got out of since 2010.

The sheer extent of the savings associated with the new approach across all the public sector is laid bare in the State of the Estate report for 2014¹¹ detailing the size and cost, efficiency of use and sustainability of central government buildings. The report claims that since 2010, the estate has divested some 2,000 properties (28 percent of the total), reduced the footprint of the estate by 2 million sq. m. (a 20 percent reduction). The report also lays out the effects of cultural changes including the use of shared space and the uptake of flexible working including a reduction in space standards to 11.3 sq m per full time employee (FTE), down from 13.0 sq m in 2010 and a space allocation of 10.7 sq m per workstation down from 12.3 sq m in 2010. The report claims that these standards compare very favourably with standard practice in the private sector (12.6 sq m per FTE and 12.9 sq m per workstation). The report claims that the resultant savings include £1.4 billion capital receipts from freehold disposals in total since 2010 and £625 million savings in 2013/14 from sales and the reduction in the annual running cost of the estate

“... Serviced offices and co-working spaces are flourishing and hotels are joining cafes as the providers of impromptu workspaces for the new army of peripatetic workers...”

There is still more that could be done however. For example, a Freedom of Information (FOI) request submitted by Condeco in 2014 found that since 1998, a worrying 58 per cent of London boroughs have seen their property vacancy rates either increase or stay the same. What is most concerning for businesses in London is that this rising figure, coming at a time when commercial rents are soaring, has gone unchecked since 2006, the time at which the DCLG stopped collating the data because of budgetary cuts. It's a real opportunity for the Government to free up valuable space and change the dynamics of the overheating property market in the capital.

Agile working is about more than cutting costs of course. Both the public and private sectors are keen to take advantage

“...Banks and financial institutions are looking at alternatives to their traditional tower blocks because they want a move away from departmentally focussed work to agile teams and mobility...”

of its greater responsiveness to change and ability to create multi-disciplinary teams, foster collaborative work, create a better work-life balance and generally enhance wellness and productivity as well as organisational performance.

Example 2: The Global Financial Services Industry

Underutilised space remains a major challenge for the financial services sector worldwide. A study by Architectural practice HOK found that space is underutilised across the sector by nearly a half. The authors of the HOK Benchmarking Report¹² claim that because ‘companies are eager to understand the link between their work environments and organisational performance, the space standards and findings in this report can provide a baseline to help corporate real estate and facilities professionals identify and respond to opportunities for improvement.’

One of the report’s key findings is that growth often can be accommodated within existing space, which is consistently underutilised by an average of 48 per cent. When undertaking renovation projects, firms should consider the creation of multi-purpose environments that encourage more efficient, collaborative and innovative use of space.

Similar conclusions are evident in a report from property company DTZ. The study, Future Financial Workplace¹³ based on interviews with banks found that many had already opened up their office buildings to allow clients and other stakeholders as well as employees to use some facilities.

The report also says banks and financial institutions are looking at alternatives to their traditional tower blocks because they want a move away from departmentally focussed work to agile teams and mobility. The report also found that there is an increasing demand for meeting space that is appropriately sized and flexible and a greater ability to cope with changes in occupancy rates of spaces.

Building flexibility

The way we measure space is central to how we resolve building tensions. For many years, the method of measuring space had been for the company to use its organisation chart to allocate dedicated workstations to individuals, usually on the basis of their status. However this is a rigid way of making decisions about the office, restricts the ability of the

firm to enjoy the benefits of agile working, takes little account of what people do on a day to day basis and means that even small organisational changes such as a promotion can lead to costly and disruptive changes in office layout.

Technology has changed this, not only allowing us to work in new ways but also measure how we use space and make better-informed decisions about office design and management. Early facilities management technologies helped with this to some degree, but we are now in a new era that offers us sophisticated measurement tools like occupancy sensors, developed to align with new agile working practices and the empowerment of individuals. **W&P**

i Paul Statham

Paul is a prominent and pioneering figure in the facilities management sector. His views on the world of work and the management of workplaces has helped to shape thinking on the relationship between real estate and technology and established Condecos as one of the foremost providers of workspace management technology.

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Following a decade of declining productivity, have business leaders finally lost patience with their organisation's IT and Property Directors?

John Blackwell

WORKPLACE STRATEGY • TECHNOLOGY

The writing is on the wall for IT and Property Directors

Productivity is at the heart of all businesses and is essential for corporate growth. When it comes to increasing output at an organisation, which in turn then directly relates to wider real wage growth and higher living standards in the economy, then the only determinant is productivity, measured in terms of output per hour worked.

The basic facts on productivity are clear. For over a decade, productivity has been painfully weak across all the major economies – UK, US, EU, Japan, G7. The UK is just one of the world's major economies that has performed particularly badly, with actual productivity having declined by 3.7% since 2008 alone. A recent OECD report went as far as saying, "... Weak labour productivity since 2004 has been holding back real wages and well-being. The sustainability of economic expansion and further progress in living standards rest on boosting productivity growth, which is a key challenge for the coming years..."¹

Yet all of this is in the face of a decade-long onslaught of new 'productivity' interventions from a range of directions. So, all of this begs the rather obvious question, of what's really happening to all these fantastic productivity initiatives? Recent research has highlighted that business leaders have lost patience with this situation and are taking direct action.

This article explores the background to this unsustainable situation, what actions organisations are currently taking, and what outcomes can be anticipated?

An age of speed

Our age of speed and overload has been building for generations. Inventions such as the telegraph, cinema, railroad, and airplane have progressively reduced distance and upended our traditional temporal rhythms.

However, the first high-tech revolutions that began to shift our experiences of time and space more than a century ago have substantially intensified over the course of the last ten years.

Unlike any time in past hundred years, the last decade has seen a veritable avalanche of new 'things' that have accelerated our hypermobile, split-focus, cyber-centric culture.

The result of this excess of interventions is to have left the workforce continually distracted by new facilities, tools, and policies to collaborate, communicate, and connect but all too frequently without the required forethought to ensure these interventions work in unison and with context.

For example, our colleagues in the fields of architecture and design have relentlessly bombarded our workforces with a decade-long campaign of open plan officing, hotelling, hot desking, collaboration space, 'communicate-collaborate-concentrate-contemplate' spaces, 'activity based working', 'spatial adjacency' and a number of other new ideas and

variations on themes. Someone even thought it was a good idea to incorporate ski gondolas in an office design.

Our IT colleagues have driven us from desktops to virtualisation, laptops to tablets. We have gone from cellular to smartphones, from internet to 'i' everything, from GUI to cloud,

USB to unified communications, with each iteration promising great productive gains. We have gone from megabyte to petabyte all because big data is good data.

And our Human Resources colleagues have taken their workforces on a journey from personnel administration to emotional capital, from job satisfaction to employee engagement, from employment to empowerment, from training to 'integrated capability development', from hiring to talent analytics, from career to core competencies. We have experienced a decade of telecommuting to flexible working to agile working.

Without exception, all of these interventions have entered into our workplaces with the promise of untold productivity gains. Yet, the absence of clear 'what's in it for me' messaging, and frequent lack of cohesion between the various delivery functions have only succeeded in confusing and distracting the workforce.

“...Our workforce is continually distracted by new facilities, tools, and policies to collaborate, communicate, and connect but without the forethought to ensure these interventions work in unison and with context...”

“...The bottom line is that business functions are no longer willing to be ‘gifted’ with the latest, greatest IT, or tolerate being shoehorned into inappropriate space that stifles their ability to attract, recruit, and retain the right talent...”

Interrupting science

While there's always a number of excuses put forward to explain this dwindling productivity, everything points to one overriding factor that stands out head-and-shoulders above all others, namely 'interruption science'.

We prize knowledge work – work that relies on our intellectual abilities – and yet the evidence is that we increasingly have no time to think.

The greatest casualty of our mobile, high-tech, over-burdened age is attention – and by implication, productivity. By fragmenting and diffusing our powers of attention, we are undermining our capacity to thrive in a complex, ever-shifting world.

Beeped and pinged, interrupted and inundated, overloaded and hurried – that is how we live today and the average knowledge worker is interrupted, switching tasks every three minutes. Once distracted, a worker takes nearly a half-hour to resume the original task.

Amongst the mounting costs² of this widespread distraction are;

- Knowledge work can't be done in sound bites. Interruptions and the time to recover now consume 28% of a worker's day,
- Employees who are routinely interrupted and lack time to focus feel 40% more frustrated, pressured, and stressed,

The bottom line is that business functions – those responsible for productive business outcomes – are no longer willing to be 'gifted' with the latest, greatest IT, or tolerate being shoehorned into inappropriate space in inappropriate locations that stifle their ability to attract, recruit, and retain the right talent. This has reached the point where recent research from the Corporate Executive Board, and corroborated by our own independent research³ is showing that three-quarters of corporate IT and Property spend in 2015 will be controlled directly by the business and not part of a separate IT or Property function budget.

Business support functions must be part of a more nimble model directly supporting business delivery units.

For example, we now have cloud services instead of corporate infrastructure, consequently we need support people focused

on what and why rather than how and when. We need support function people to have collaborative and analytical skills, who understand the outcomes and can work in business driven, cross-functional teams. However, research⁴ finds that as high as 90% of existing business support function staff do not possess such skills!

Combine this skills mismatch with; changes in budget

ownership, the sharp upswing in app-based infrastructure, and property costs seen as an overhead, which is accelerating the pressure to reduce costs and improve space utilisation, all the indicators are an 80-90% redundancy across IT and Property functions over the next 18 months.

As one FTSE100 CEO said to us, “...I can tell you roughly what our headcount is likely to be in twelve months' time but don't ask me to predict what jobs they will be doing. If we can't predict that, then it's hopeless to try and suggest where office space will be required...”

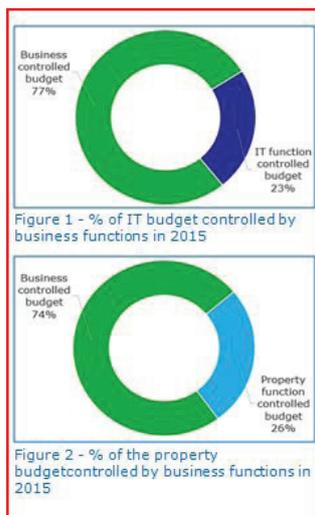
With business units now controlling the majority of IT and Property budgets, the focus has shifted to an intense scrutiny of the previously heavily siloed business support functions and the roles performed by their

respective IT and Property directors.

Prioritising talent retention

From 2009, there has been a perfect storm in university entrance statistics where, under increasing financial pressure, the world's leading universities have entered an 'arms race' to be rated as the highest performers. Understandably, universities focus on selecting the very brightest entrants onto their graduate programmes – and at age 18-19, women are achieving 8-10 points higher academic achievement compared to their male contemporaries.

The net result is that women will comprise 67-69% of graduates for 2015-16, a percentage that is only set to grow in future years. This means that employers looking to secure the best and brightest talent must place a significantly greater focus on being better at attracting and retaining female graduates. However, this brightest cohort are entering



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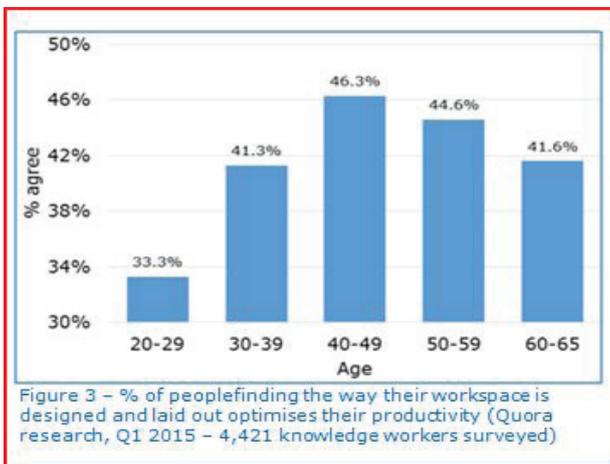
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“...There is a compelling need to reinforce common goals, build relationships, and connect a deep understanding of the business model and desired outcomes with technology and the locations needed to retain the best talent...”

workplaces where, as figure 3 shows, overall only 2-in-5 staff regard the way their workspace is designed and laid out optimises their productivity – a sharp rebuke for outpourings of office architectural and design practices. Furthermore, newly hired staff report encountering dull and uninspiring management. Consequently, it is hardly surprising that 45-50% of the brightest, newly hired talent are leaving their organisations within the first two years⁵.



Conclusion

It is clearly time for the important business support functions – IT and Property – to slim down, shape up, and merge into the business divisions while Business decision makers need to balance the need for longer-term investment and strategies. The traditional role of IT and Property Directors as head of sprawling silos, controlling vast budgets, operating separately from the business function has clearly had its day.

There is a compelling need to reinforce common goals, build relationships, and connect a deep understanding of the business model and desired outcomes with the technology that is already running the ‘firm’ and the locations needed to retain the best talent.

We are witnessing a sea change in IT and Property Director priorities but a change is also needed throughout

their operations. In many cases, executives still prioritise on the wrong competencies as talent planning is not linked to strategy and is unable to handle change.

However, this requires existing functional staff to cast off their former silo’d mantle and acquire a new set of skills, which few appear to possess. They lack the collaborative and analytical skills, and judgment needed to work in business driven, cross-functional teams. They require emotional intelligence from motivation, reflection, and self-awareness, fostering relationships, understanding organisational dynamics, together with being socially aware and business savvy.

These new capabilities underpin the new roles that will form the new business IT and business property delivery **W&P**

John Blackwell

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Technology and generational change are combining to set free knowledge work. Organisations and individuals need to understand where and how they work best to be creative, collaborative, secure, resilient and well paid

Paull Robathan

WORKPLACE STRATEGY • CREATIVITY • TECHNOLOGY

Work and workplaces are no longer just about space

Over the decades designing productive and conductive spaces to work has focused on redefining the corporate office and its surroundings. Fantastic results have been achieved, and there are wonderful examples of quality design in buildings around the world. But there is a growing movement that challenges the presumption that work should always be done “at work”.

If we aim to allow people to be at their best, develop and nurture creativity and maximise quality output; then ensuring the place where the work is created is a strongly positive environment is a key factor.

Sarah Kathleen Peck of 'It starts with' summed it up when she wrote “There are people, places and things that make me feel like I’m building my energy stores, that rejuvenate me, and help me to do my best work.

Likewise, there are also people and places that zap my energy; that leave me exhausted; that make me feel as though I’ve waste my time and my energy –and my day –without getting anything useful done.”

Millennials, or Generation

Y, are the first group of workers who naturally and pretty universally assume that mobile communications is the norm. As Baby Boomers reach retirement age the X and Y generations make up an increasingly large percentage of the knowledge workers around the world. They don’t think work is 9 to 5, nor do they worry about work spilling over into evenings, weekends, or even holidays.

Paul Miller and Elizabeth Marsh, authors of recently published ‘The Digital Renaissance of Work’² discuss the latest developments they describe as “work not place, freelancing in a world of work but not jobs”, the death of the weekend and crucial issues such as trust, privacy and team working in a widely dispersed workforce.

There are four trends that characterise the fundamental shift that is underway in work:

- Device independence,
- Seamless ubiquitous networks,

- Generational refresh,
- Security and Privacy.

These interact with Corporate Strategy which, however fleet of foot, is burdened with the weight of real-estate and support contracts that can only make sense if city-centre buildings are occupied at high density.

Before exploring in more depth the technologies that enable us to work remotely – let’s look at the ways they enable us to work just about anywhere.

Work is not about place

The best place to work depends on many factors. How easy is it to get access to the information we need to progress, how can we collaborate with our co-workers and others to get things done?

Work does not stop in the 24/7 world. However much I think about a dinner engagement with my wife in London my partner in San Francisco has just started his day and wants to press ahead. I have to decide whether it is with me or without me.

Life is a beach - mine is in Wexford, Ireland (top right) and is the longest continuous sandy beach in Europe, a short distance from our house, and often deserted, especially in the early morning. Trust me - if you want to think large thoughts, consider the world view of a strategic set of options, then sitting or walking on a beach like this gives you a whole different perspective at 8am as compared with arriving at the office in the City of London after a crushed commute, a queue at the coffee shop and a wait for the lift.

But it does not have to mean being out of touch. My son works in Sydney in the same business as I do and as a Generation X he is heavily into life balance and technology. At 8am in Sydney he would have been swimming at Bondi and drinking coffee before a short ride to work in Surry Hills. But at 6pm Australia time he is in the office and FaceTime from the beach gets an immediate response. He provides links to key references for this piece which arrived in clickable form via

“...If you want to think big, consider a strategic set of options, sitting or walking on a beach gives you a whole different perspective compared with arriving at the office after a crushed commute...”



Messenger in no time. And I can send him the draft article, get his comments and update it right there and then.

The beach is not always ideal, face to face contact is crucial for first meetings at least, and when there is an imminent disagreement. Location is still not an issue, because I go to the client's office - still in touch with the world, often more than he or she is even when at their workstation.

And this sort of location independent knowledge work has been around for decades. In 1996 the Daily Telegraph in the UK profiled my working situation, when I was working in four different roles, including lecturing in Facilities Management, running an Emerging Technology Assessment unit at Bath University, consulting for several clients and acting as a non-executive Director. That's pretty much how it's been for the last 30 years, and the only thing that has changed is that technology is making it easier and cheaper - no office, no overheads.

So why is Marissa Mayer CEO of Yahoo telling all her remote working employees through her HR chief Jackie Reses to start working from

a Yahoo office or quit? The reason given was that "being a Yahoo isn't just about you day-to-day job, it is about the interactions and experiences that are only possible at our offices". Reaction has been quick. Jennifer Owens of Working Mother Media described the move like this. "It comes from fear. Fear that if I can't see you I don't know what you are working on. It's a distrust of your own workforce". But Mayer may not see it that way. A Yahoo spokesperson said "This isn't a broad industry view on working from home - this is about what's right for Yahoo, right now."³. Speculation is that Mayer is really about cutting a lot of fat from an organisation that is overloaded with staff due to historical factors. In fact this process could lead to Yahoo becoming much leaner, more focused, and more likely to engage staff in flexible remote activities as and when they know they need them.

As far back as the late 1980s I recall flying from Texas to California on business and being massively impressed by a

group of six PeopleSoft employees who were sitting around me - they were all going to work for a new client, had never met each other, but were completely on the same page on both the project in hand and on everything going on in their company. PeopleSoft worked hard at using software products such as Lotus Notes to share absolutely everything about the business, with all their employees working remotely. The employees in turn had a strong bond with the firm and with every other employee they met. It takes effort to create a team culture over a wide geographic area, but my experience is that it can work well.

In today's emerging technology environment there are clear signs of a robust set of solutions to support more and more effective work that does not take place in a single office in long rows of identical desks.

“...In today's emerging technology environment there are clear signs of a robust set of solutions to support more and more effective work that does not take place in a single office in long rows of identical desks...”

Don't get me wrong, I get the reason for offices, as a focus for the customer and competitors as much as for the staff. The architecture, design style, ambience, location all say a lot of very valuable things about a company and if they are consistent both in the message

they send at every location, and with the intended personality of the business then the whole thing works to create a strong brand and identity.

Remote work, either by employees or by freelancers, can be a major enhancement to any business, improving the working lives, productivity and creativity of the individual while reducing real estate costs and overheads for staff employed on tasks that external professionals can do better and cheaper. Work is not about place any more, and it's not about being paid to put in an eight hour day whether anything is achieved or not. It's about recognising and rewarding value and commitment wherever it is given.

The message must be that work that is not tied to a desk can be more productive and enhance individual's lives. But the organisation only gains significant benefit if there is deep understanding at senior management level of how to motivate and manage a distributed workforce and make available a set of

secure, auditable tools that bind the remote employees together for the good of the business.

From here on in we get a bit technical, but the analysis (above) should serve to underpin my certainty that there is now a means of achieving the benefits of supporting employees in working in the way that makes them most productive, whether that is in the office or not.

Device independence

The value of a single corporate device policy married to strong privacy features made Blackberry a highly prized corporate tool, but should the security aware organisation continue to commit to proprietary devices that offer tight security in a closed environment?

The world has moved on. Android 5.0 (Lollipop) will support multiple personalities on one mobile device including a guest mode that does not tamper with the original owners' setup. Security is more robust, encryption is the norm, and user accessibility is balanced with security, through continuous facial analysis and paired device "smart lock". Apple's iOS shares the increasing sophistication and simplification of continuous security protection and these features will become ever more effective, robust and tightly integrated, with an enhanced and pain-free user experience.

Wherever the creative knowledge worker finds themselves, they will be increasingly comfortable that their mobile device will not be the restrictive element of a seamless place-neutral working environment. So much so that BYOD (Bring your Own Device) will replace the personal interaction element in the physical workplace as well as on the beach.

Of course 5-inch diagonal screens with limited keyboard capacity do not replace 30 inch diagonal screens with multiple windows and ergonomic keyboards, but in most situations it will not matter. Voice access is so common on mobiles (Siri, 'OK Google') that whatever comes after Generation Y (my 5 year old grandson) already takes it for granted.

By the time he is in the workplace (will we have to change that word?) simultaneous translated conversation together with onscreen text translation will remove the need to learn another language or to remember telephone numbers or email addresses.⁴

One device accessing anything anywhere sounds pretty scary. How can the organisation ensure that data does not get lost, or worse, compromised, without any audit trail?

Seamless ubiquitous networks

Microsoft has announced a tie-up with DropBox- offering free Microsoft Office on mobile devices coupled with tight integration with DropBox, which is used by so many individuals for their personal data. DropBox for Business addresses the immediate concerns of corporate IT and Audit - security, audit, sharing and multi-factor authentication.



300,000 plus third party apps supporting everything from signed PDF documents to sharing in web conferences.⁵

I lectured in Emerging Technology in the 1990s, including in Manhattan. I vividly recall presenting a scenario to a public

class I was teaching - Teledesic was just about to launch a Near Earth Orbiting network of satellites and one of its key investors was Microsoft. I remarked that we could even consider the possibility that some time in the future software for functions such as word processing would no

longer reside on our local computers, nor would the files we would create; every full stop and semi colon would wing its way to the satellite, down to Redmond to Microsoft central, and the resulting change would appear on our screen and that of our collaborators in no time flat.

At coffee break I was surprised to be button-holed by two very sharply dressed young evangelists from Microsoft who were attending the class; they suggested that I should not joke (I wasn't) about such potentially mould-breaking changes.

Suffice to say that today many, many, tens of thousands of knowledge workers spend their day working on collaborative documents with no knowledge of the physical location of their collaborators, no desire to know where the actual data is being stored and manipulated, and no fear that the whole thing will collapse at any time. From Mind-Mapping to complex interactive design the tools exist and are being used.

Generational refresh

I am a Baby Boomer. Not necessarily typical, having spent 45 years plus in high tech environments and continuing to pretend to be 25 online even though I am on my way out to the long grass. I see colleagues who have never kept up with technology trends, do not want to and may even actively avoid some of the more intrusive (in their view) aspects of social media. Not so with the Millennials (Generation Y). If you were born any time after 1975 then you know what I mean. Y takes ubiquitous instant communications for granted. Y individuals

“... Wherever the creative knowledge worker finds themselves, they will be increasingly comfortable that their mobile device will not be the restrictive element of a seamless place-neutral working environment...”

“...As the generations refresh and the proportion of generation X, Y and then Z enter the workplace it will be the norm to communicate with friends and family throughout the working day, and unacceptable to be forbidden...”

expect to live differently. Draves and Coates in their prescient 2004 book 'Nine Shift: Life and Education in the 21st Century'⁶ suggested that nine hours of our day would be spent differently in 2020 than in 2000.

Nine major shifts in a transition from the Industrial Age to the Information Age and Work and Place, and the way we interact with them were front and centre in their proposition that:

- People work from home
- Intranets replace offices
- Networks replace pyramids
- Trains replace cars
- Dense neighbourhoods replace suburbs
- New social structures evolve
- Cheating becomes collaboration
- Half of all learning is online
- Education becomes web-based

These challenging assumptions of a world already shifting without its older population even noticing is looking more and more right on the money. Deloitte's⁷ predict that this year we will send 50 billion MIM (mobile Instant messaging) messages from WhatsApp and similar, compared with 'only' 21 billion through traditional text messaging. Text Messaging was only invented in 1992, and now it's on the decline. In 2012 12-15 year old sent an average of 193 messages a week according to Ofcom and this was double the number of just one year earlier.⁸

Security and privacy

It used to be pretty straightforward. If you needed to reference a key document you went to it - Magna Carta was signed in 1215; the copy used for consultation by parliament is a 1297 copy⁹ that has been housed in the Guildhall in London since that time and has only left the building four times - to avoid the Great Fire, the Blitz, during the renovation of the Guildhall and on November 9th 2014 in a carriage during the Lord Mayor's procession. High security combined with a single reference copy ensures the primacy of this fundamental record of liberty.

The liberties enshrined in Magna Carta are with us today, but liberty and freedom are expressed in a different

manner when it comes to online access. The Electronic Frontier Foundation has campaigned for many years to ensure that the internet remains neutral, allowing all users equal access, together with a reclassification of broadband networks as a telecommunications service. In November 2014 President Obama agreed¹⁰. By applying the techniques and mechanisms described here a free open internet can also be a secure, collaborative workplace for the Millennial company and any other that chooses to support knowledge workers to work in the way that works for them, wherever it is **W&P**

i Paul Robathan

A technology strategist for over 40 years, Paul Robathan's speciality is the intersection between technology, buildings and people. He has worked in this context in Banking, Telecommunications, Health and Housing. He was the first Chairman of the European Intelligent Building Group and is fortunate still to be associated with the CIBSE hosted version of the same body.

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Open plan office design gets such a bad press these days that it's time to redress the balance and consider the things at which it succeeds

Maciej Markowski

OFFICE DESIGN • PRODUCTIVITY

Keeping an open mind about the open plan office

There has been an historic debate on whether open plan offices are a good or bad thing. Past articles whether in the Guardian¹, Dezeen² or across the pond in the Washington Post³ would suggest that they diminish productivity. Yes, the open plan office is not ideal for privacy and probably bad for conceptual focused work, but it's a bit like saying a hammer is useless when you need to tighten a screw. The point is you don't use it for that purpose. Fans of open plan often underline how fantastic it is for building a sense of belonging, team spirit and ad hoc collaboration, often ignoring the challenges of working in an open plan environment. The point I'm making is that introducing open plan into your office is probably a good idea, but you really need to make sure that you provide your employees with a menu of settings which allow them to concentrate, have ad hoc meetings without disturbing their colleagues and provide some privacy for confidential conversations.

Let's have a look at where open plan works and where it really doesn't.

Where open plan fails

"There's mounting evidence that the lack of privacy is causing people to feel overexposed in today's workplaces and is threatening people's engagement and their cognitive, emotional and even physical wellbeing. "Donna Flynn, Director of Steelcase's WorkSpace Futures Research Group

"Many workplace productivity programmes focus on enhancing collaboration, at the expense of concentrated work, which can be equally important. Getting this delicate balance wrong can significantly inhibit your ability to develop new products and services and deliver them to your clients." Forget the Workplace for Now" JLL Report, 2014⁴.

If you ask many employees working in open plan offices what is bothering them, they'll probably tell you two things: that they cannot focus and they have no privacy.

According to a number of behavioural scientists and evolutionary biologists we all need some time to feel unobserved, unjudged and fully comfortable in our own skin. Modern, open plan based offices simply fail to cater to that need. According to Dr Nigel Oseland, "the absence of physical boundaries will increase the likelihood that co-workers and leaders will interfere with the employee discretion and

freedom to work. This lack of autonomy may be a stressor."

It seems that the ability to concentrate is even more impeded. If your job demands a lot of concentration, or learning and remembering new information, your efficiency can drop by as much as ten percent if you can hear people talking around you. Helena Jahncke, an environmental psychologist, used four different studies to examine how noise affects employees. In one of the tests, participants were asked to use several different tables of figures to find a residence built after 1963 that cost more than €57,000 and that had a floor space of less than 63m². Assignments like this, where you need to remember variables and use them to find the correct information, were among the hardest for participants working in a noisy landscape. The costs would be higher for demanding work tasks requiring greater thought. Jahncke's studies show that people tired more easily and became less motivated in noisy surroundings.

But is it possible to solve this problem by investing heavily in acoustic panels? Unfortunately it seems that many acoustic solutions only make matters worse. Jahncke suggests that intelligible speech – understanding what your co-workers are saying – is the most distracting noise for employees. Unfortunately, if you lower background noise you might make nearby conversations come through better but this can make these remedies counterproductive.

The statistics are quite shocking. According to one of the latest University of California studies, a typical office worker is interrupted as often as every 3 minutes. To make matters worse, it takes us up to 23 minutes to be able to return to the task at hand. Does starting to read the same page of a report for the third time sound familiar?

There are numerous studies pointing out other open plan deficiencies from increasing the number of sick days to increasing stress levels, but many of them were conducted with a really poor methodology as Dr Nigel Oseland describes in his article⁵.

For instance, take the famous Danish study by Jan Pejtersen⁶, which found that employees occupying single offices reported almost half the number of sick days (4.9 days) compared to open plan (8.1 days) and multi-person room employees (7.1-8 days). I found the study disappointing as it ignored the seniority of employees (aren't single office occupiers usually more senior?) and only counted self-reported absenteeism (how

often do managers really take sick days, rather than just work from home, if sick?), ignored the way people commute (are you more likely to catch the flu in tube or in your car?) and many other factors.

With all these issues in mind it seems that open plan may really be the devil, but let's consider the advantages before we make our minds up.

The benefits of open plan

The most obvious benefit of the open plan office is its cost efficiency. You only need 1/3 of the space to add a workstation in an open plan office in comparison to adding one in a single office. In places like London this translates into a considerable cost saving for a company.

Secondly, open plan significantly improves the knowledge exchange between employees (see the Knoll study⁷). One thing that immediately starts happening when you move your employees to an open plan office is that they start experiencing the benefits of 'constructive eaves-dropping'. People will talk about a problem or a project and suddenly somebody will join in with a good idea or a solution. In our rapidly changing business environment this is a key benefit.

Thirdly, and it's connected to the previous point, open plan supports spontaneous brain storming. Whilst working in a single office you tend to deal with most of your problems alone or maybe with one other person, but in an open plan office it's very easy to ask somebody for help and quickly exchange ideas with your team. This increased collaboration has significant results. According to one Harvard Business Review study, companies that encourage collaboration by switching from closed-offices to open-offices realise performance increases (speed and accuracy of work) by 440 percent.

Finally according to a number of recent researches (Gallup, Steelcase, Gensler, Knoll) open plan significantly increases the sense of belonging and team spirit. Sitting in an open plan office, you feel involved in what people around you are doing and you see their faces much more often. Many people feel left out and not 'in the know' sitting in a single office.

Not a universal solution

"We prefer landscapes that give us a clear view of what's happening around us - open places that offer a broad vantage as part of a group as well as ready refuge places where we can hide if needed," Meike Toepfer Taylor, Design Researcher, Coalesse

As the quote - widely attributed to Einstein - goes: 'you can't solve a problem with the same level of thinking that created it'. It is very hard to find a solution to guarantee communication and privacy and the ability to focus. Thankfully you don't have to tear your hair out trying to decide if the benefits outweigh the drawbacks. You can have the cake and eat it too.

Creating an office that is tailored to employee needs, which provides a menu of settings is always the best solution. We are yet to find a company where the satisfaction level drops after the implementation of agile working also known as activity based working, flexible working etc.

Open plan is great for building a sense of belonging, allowing quick information exchange and works quite well when you have a routine or medium-focus-intense task at hand.

“...If you ask many employees working in open plan offices what is bothering them, they'll probably tell you two things: that they cannot focus and they have no privacy...”

However only by providing spaces for focused work, one on one conversations, confidential phone calls and quick ad hoc meetings will you be able to create a space that combines the benefits of a cellular environment with those of an open plan whilst removing most of its drawbacks.

Is it more space efficient than one where employees use single offices? Yes, significantly. Is it more efficient than one where all that's provided are desks in an open plan office and some meeting rooms? No if everyone has an assigned desk; yes if people desk-share.

Just to give an example, the 5th floor of my office at JLL, Warwick Street used to be mainly open plan, now it hosts the same amount of people with almost 30 percent fewer desks (7 for every 10 employees). This allowed us to gain space for quiet rooms, a large café and plenty of meeting rooms, ad hoc meeting spaces and touchdown settings where visitors and employees can work for brief periods of time.

Providing single offices or rooms for employees is a rather lazy solution nowadays in my opinion. Yes you provide them with good privacy and a place to focus but there's a lot that you lose. First thing that suffers is the sense of community, knowledge-sharing and spontaneous brain-storming. Besides with the current rent prices in London it's hard to expect companies to move away from the open plan office. We hope however that they'll add some other tools to their workplacebox. **W&P**

Maciej Markowski

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There needs to be greater awareness of the velocity of workplace innovation, the growth of Smart Cities and their market effect on the architecture, engineering, construction and facility management industry

Paul Doherty

SMART CITIES • BUILDING INFORMATION MANAGEMENT • BIG DATA

Smart buildings, Smart Cities and infinite data

The rapid urbanization of our world and the weaving of buildings into the fabric of Smart Cities are some of the great challenges facing our industry today. Along with the vast amount of definitions and marketing campaigns surrounding the phrase “Smart Cities” comes the challenge of understanding why the movement is important to the Architecture, Engineering, Construction and Facility Management (AEC/FM) industry and how its stakeholders can profit from, or at the very least, not get swept away in the tsunami. The emergence of Smart Cities as the conduit for ideas, thoughts, policies and strategies for urban environments is an important milestone for our industry, and it comes at a time of rapid innovation, convergence and redefinitions.

Urbanization

Before diving into the numerous definitions of a Smart City, it is important to understand the underlying forces driving this movement, from ideas and concepts into actionable projects and programs. The unique timing of market conditions, technology innovation, social wants and government needs and the global migration to urban environments that dwarfs any mass movement of people in history; are the forces that are converging to create the Smart City tsunami.

Cities are exploring their options, led by the competitiveness between cities to attract and retain top talent and businesses and provide quality public services while balancing a budget. This exploration through innovative projects and programs is giving rise to a context called Smart Cities.

In 2008, the United Nations reported that the world’s population living in urban areas rose above 50% for the first time and is expected to reach 70% by 2050. If true, the world’s urban population will reach 5 billion by 2030. Using only 2% of the entire planet’s land mass, cities are using 75% of the world’s natural resources which account for about 80% of the planet’s greenhouse gas emissions. Cities are moving to a Smart City agenda not because they want to, but because they have to.

“...Cities are exploring their options, led by the competitiveness between cities to attract and retain top talent and businesses and provide quality public services while balancing a budget...”

Due to the local priorities and needs of each city, there are numerous emerging definitions of a Smart City. The flexibility of this definition provides cities with the opportunity to define their own programs, policies and procedures according to local priorities and needs. Smart City definition frameworks are designed and marketed by academics, companies, urban associations and then reported in the media. Most of these frameworks have projects and programs that include Smart Grid, Smart Buildings, CleanTech and Smart Governance. Through these frameworks, a foundation has emerged that helps define areas of Smart City interest, action and measures. Most frameworks use the SMART acronym to define Specific, Measurable, Achievable, Relevant, and Time-based goals.

Most of today’s cities are running on independent, multiple departments, which can be associated with “Operating Systems”, designed to optimize a specific service in an expert system manner. The goal of efficiency and effectiveness for a city to grow into a Smart City is to provide conduits of how these different Departments/ Operating Systems can work and learn together, sometimes through integration and collaboration and other times through interoperability.

The ten common Areas/Departments/Operating Systems that are seen as leading indicators of Smart Cities include:

- Transportation
- Infrastructure
- Energy
- Water
- Waste
- Public Safety
- Education
- Healthcare
- Green/Smart Buildings
- Citizen Services

As cities begin their transformative process into Smart Cities, it helps to consider the manner in which cities they need to address the social, economic, engineering and environmental challenges. The interesting thing about Smart City initiatives is

the closely integrated way that seemingly disparate elements work together. Many cities are finding that the common element that ties together these elements is the identification and use of authenticated data from the built environment.

Authenticated Big and Infinite Data

The main issue for the AEC/FM community is not to find itself mired in the complexities and sheer scope of Smart City initiatives such as the Internet of Things, Big Data and the infinite overlap of process, communication and technology. Rather, its focus should be to find itself at the discussion table of Smart City protocols, standards and projects, providing a wealth of knowledge concerning the physical space and exploring the use of its data in the digital space.

How this conversation between the industry and Smart City stakeholders should begin comes from the growing use of Building Information Modeling (BIM) and the emergence of captured operational data from Smart Building initiatives. BIM and Smart Buildings provide the digital DNA that when put into the context of a neighborhood, district and City, provides a city with valued, relevant, authenticated data.

The key to success in creating value propositions for both the professional who owns the rights to this data and the Smart City stakeholders will be how effective and efficient the building's data, its Digital DNA, weaves itself into effective Smart City initiatives. This creates opportunities for Cloud based and mobile analysis and management that can lead to better design, performance, service and sustainability. The emergence of the phrase Big Data becomes a marketing and business development tool for the stakeholders in the built environment to begin to translate and interpret to the Smart City stakeholders why our data is important to them and how the knowledge behind the urban intelligence of Big Data latently resides with today's AEC/FM professional.

As we identify the challenges of living in a highly connected and resilient world, it is comforting to relate to our cities as organisms. If the city is an organism, then we have seen its evolution from the agrarian society to the Information Age to today's interconnected world through the development of systems. Each city has its own cardiovascular (traffic, mass transit), skeletal (infrastructure), respiratory and digestive systems (energy, waste) and even a primitive nervous system (telecommunications). In order for a city to provide access to its intelligence behind and become a Smart City, the development of the Intelligence System that connects the central nervous system to a brain is required. Feeding the vast amounts of data into this brain will require a measured and thoughtful process.

Does a city create an uber system which consolidates all its data and functions into a nice tight package but run the risk of having such a system vulnerable to hackers, terrorists or other challenges? Or does a City emulate the Open System approach prevalent in the IT industry and create a dispersed framework of interconnected exchanges that allow important data to flow freely to the end user who, but runs the risk of technology complexities and a "too open source" way of working that makes a system so resource intensive to be unrealistic? The operational structure for a City's brain will become one of the great challenges for our world's built environment.

So just what AEC/FM data is valued and relevant for cities that are looking for pathways to becoming a Smart City? It is important to learn what cities already possess to properly answer this critical question. Due to the implementation of vast information technology (IT) solutions over the past few decades by cities, the world has created varied and enormous amounts of data in both digital and paper formats.

This data comes in all shapes and sizes and enables an enormous amount of tasks to be conducted more effectively. The issue is not if the city has the data to become a Smart City, but how to apply it. The media people are calling this the emancipation of data from silos. This means that an enormous body of data has the ability to enter your city and freely circulate. The job of the city's IT department is not to just secure people from getting into a city's system, but to control and manage the glut of data that will be trying to escape.

Think of what happened to sensitive data that was set free in the Wikileaks scandal a few years ago and you get the picture on Big Data's effect on the free flow of data. So a major issue for a city's IT department is how to manage Big Data, now that it can be set free so easily. The City that solves this issue will be on the correct path to being a Smart City. Those that don't may experience what other organisms experience when there is too much blockage in its nervous system, a breakdown.

The focus on Big Data and your city's behaviour towards its data's management is a critical element towards being a truly Smart City. A smarter, efficient city that would encompass aspects of intelligent transportation, security, energy management, CO2 emissions, and resiliency is contingent on the implementation of a Big Data strategic plan to enable decision makers and authorities to perform their jobs.

In response, some cities have taken an Open Data approach to assist in making data available to the general public, which has spawned an emerging market for the development and sale of "Apps" to enable this Open Data to come alive and provide value to a user. Some cities have also begun programs to leverage the existing data on the built environment found in their building departments, zoning departments and utilities.

Programs like Smart Permitting in Singapore; Quick Response (QR) tagging of Building Permits in New York City and Smart Metering/Wifi in Santa Clara, California are leading their citizens into the next generation of their relationship with the city. A relationship that fosters a two way communication built on trust, while acquiring and building captured and authenticated digital DNA (Big Data) of the city's built environment - becomes the foundation for a Smart City and is a winning combination for the transformation of interesting cities into Smart Cities.

Smart buildings

For over 20 years, many buildings have moved towards automating facility management processes to provide a quality environment, streamline tasks and deliver more efficient resources. However, the sophistication of certain building systems like lighting, heating, ventilation and air conditioning (HVAC), conveyance systems (elevators, escalators) and security has created robust solutions, but has also created deep silos of operation.

The challenge for many occupiers is to integrate these systems so buildings become smarter by having operational data “talk” to each other. It is a daunting task, as there is massive complexity inside buildings - with both proprietary and open protocols and systems, that can lead to a resource intensive process just to have systems communicate. Integrated solutions have matured in recent years, breaking down this task into affordable solutions. Equipment management control companies have provided the market with innovative Building Automation Systems (BAS) in many configurations that are creating the framework and environment for the emergence of truly Smart Buildings.

What this maturity of Smart Buildings brings to the market is the opportunity to look beyond the individual project and position for capturing value (and alternative revenues) at the data transaction level. If the market is creating the digital DNA of the building and the building is leveraging this data to perform at an optimal level, the logical next step is to have buildings begin to communicate together as a self-healing style network.

Knowing that your data is being used in a more robust ecosystem of a Smart City that has potential transactional value, AEC/FM leaders will capture greater market share and open up new opportunities for growth than their competition. This revaluation of digital DNA dwarfs any previous notion of the value given to AEC/FM data.

“... Wherever the creative knowledge worker finds themselves, they will be increasingly comfortable that their mobile device will not be the restrictive element of a seamless place-neutral working environment...”

Buildings as servers, cities as networks

Think of your city as a network, with each building acting as a server. When this individual building data is connected to the City Network, likely through an Open Data policy or as an ordinance, interesting things begin to happen. The captured AEC data that a city captures through this process or already possesses becomes the digital DNA of Smart Cities.

In a similar way to the latent data in each building; cities possess an amazing amount of data of various forms. The magic of utilizing this data to make better decisions lies in identifying, locating and reporting latent data into actionable data. Like oil exploration, finding the right reservoir of raw data to tap into can be an interesting journey in itself, but with advances in ICT like Cloud-based technologies, there has been great improvement in a city’s ability to gather vast amounts of data in a cost effective manner.

ICT advances becoming commonplace in cities today include:

- Ubiquitous sensors enabling authenticated data collection.
- Low-cost communications protocols and systems to simplify and reduce costs.
- Pervasive video devices that assist in public safety programs.

- Real-time management systems for traffic, water, sanitation and public transportation that automate control and optimize performance.
- 3D visualization analytic tools that translate all of this data into actionable intelligence.

This data intelligence process begins with a proactive approach of identifying, capturing and managing a city’s digital DNA. Because the outcome is to equip city stakeholders with the tools to make better decisions, 3D visualization analytic tools are emerging as the preferred method due to their ability to take highly complex amounts of data and show results in context with the actual city. In order to work 3D visualization tools require accurate, authenticated data to “build” a 3D view of the city.

This data resides in a city’s building department, engineering department, land department, planning department, sanitation department, tax departments, postal services or any department where they collect and manage vast amounts of data that when viewed as a whole, create the virtual

representation of the physical city. The building blocks to use this data rest on the ability to repurpose its existing data and documents associated with the Built Environment. The accuracy, authentication and integration of this data is the key to a proactive approach to entering a path to becoming

a Smart City. Without proper digital DNA structure and management, the connectivity from a city’s “nervous system” to a “brain” will be problematic, inhibiting performance and the evolution of a city into a Smart City.

Once this foundation of a digital visualization process is in place, cities have the ability to leverage this “front end” to begin viewing the data behind the digital, smart buildings. Today, cities acquire most of the data of a building through some basic communication of paper and digital reporting which can be resource intensive. What is emerging in both is the automation of this reporting process through programs and systems like Smart Meters, cable television and telecommunication boxes and building “Black Boxes” that can house and report on the “health of a building” for things like structural integrity to Building Automation System data.

This can be viewed as buildings becoming servers of data, like in a computer network. Best practice installations use the core of the building and mechanical room as the location where this building data can best be captured, managed and reported. Think of a building’s core as the “spine” or backbone of that building that can be hard wired connected to the Internet, with a redundant backup of being wirelessly connected, to communicate with an intelligent operations center (IOC). Once at the IOC, the building’s data can be analyzed using the 3D city model for quick, intuitive results.

A simple example is the capture of power consumption, which is reported in real time to the IOC, measured against

benchmarks and then each reporting building showing a Green, Yellow or Red indicator. If the user wants to view more information on the colour coded building, they can have access by clicking on the building. Lessons learned and best practices from operating and maintaining computer networks will be required reading for many city stakeholders to realize the benefits of having immediate access to authenticated building data.

Easily mapped to a computer network, the City as a Network brings many unexpected results that cities are only beginning to discover. Using buildings and infrastructure assets as a visualization and data foundation, the use of sensors, video and mobile devices to assist with city management becomes an easier process. This best practice of IOC's for cities elevate the value of data coming from both AEC and FM. Innovative AEC and FM firms are rethinking their value propositions when they realize that their data is being used over a longer period of time when in the context of Smart Cities rather than just in the design, construction process or just within a single building's use.

New business models are emerging that put a portion of traditional AEC and FM fees into extended service agreements based on the amount of data used, like the music industry publishing model. Others are becoming data escrow agencies who provide data on an "as needed" basis, ensuring the quality and authentication of data. Using the Cloud to conduct and automate these services, the costs and technology complexity usually associated with these solutions are negligible, making the business case easily adoptable. As these emerging business models mature and the market begins its pull cycle for digital DNA services, the rewards to innovative companies will be substantial, potentially outperforming existing fee based contracts.

The age of the Smart City is before us all. We did not ask for it, but it is here nonetheless. Smart Cities are being created due to a perfect storm of economic conditions, the next generation ICT tools and urban migration that require new and existing cities to respond with powerful new programs, solutions and relationships between people, places and things. This time, our time, requires not just smart technologies and systems, but smart thinking. The basic goal of Smart Cities is to improve the quality of life and the wellbeing of its citizens, as Human Capital far outweighs any other measure of a successful urban environment.

As the discourse, development and implementation of Smart Cities emerge as a primary objective for urban environments across the globe, it is vital that we as a people do not get this wrong. Having a place at the table to assist in creating Smart Cities should be a goal for the AEC/FM industry as our data plays a fundamental role in the success of Smart Cities and our processes need to be understood by other stakeholders. If we fail to ensure our voice is heard, Smart City initiatives run the real possibility of not achieving optimal results.

The AEC/FM firms that best exhibit this ability to have a place at the table are in an enviable position of transforming



The main business district in Singapore

their value and ultimately their revenues to levels never achieved in the traditional sense of our industry.

There are three key ways for a Smart City strategy to succeed:

1. **Holistic View:** Smart City strategies and solutions must be considered with the context of a city's entire operations infrastructure processes and workflows. This ecosystem view will assist in identifying isolated projects will have limited impact. Cloud-based, 3D Gaming style solutions are proving to be successful in telling this vital story.
2. **Citizen engagement:** Gaining public support and trust in new processes and tools such as crowdsourcing, mobile Apps and report tracking is a primary objective of many cities on the path to becoming a Smart City.
3. **Collaboration:** ICT technology breakthroughs, insightful policies and urban designs that delight are intersecting in a manner that calls for collaboration at a rate that we have not been accustomed to before. These points of intersection are fertile ground for innovation within organizations and between organizations.

Cities are a mirror to the values of our age. Both large and small Smart City solutions have the opportunity to assist in creating an urban environment for people to prosper, in a welcoming, inclusive and open manner. Living a "connected" life is being transformed into living in an "interconnected" life for people living in today's urban places. When people, places and things begin to seamlessly and transparently communicate, interesting things begin to happen. This is the promise of Smart Cities. Getting Smart Cities right is our generation's greatest challenge and the best legacy we can leave to our children. **W&P**

i Paul Doherty

Paul is the President and CEO of the digit group, a Silicon Valley-based Smart Cities solution provider. Paul is a licensed architect and regular speaker at industry events. He sat on the Board of Directors of IFMA and is the co-founder of the IFMA Shanghai Chapter, former President of the IFMA Information Technology Council (ITC), co-founder of the IFMA Smart Cities Task Force and the co-founder of the IFMA BIM Lifecycle Operations Community of Practice. Paul's current work is focused on Smart City solutions worldwide. Paul is the co-founder and producer of the AEC Hackathon (www.aechackathon.com) that launched at Facebook Headquarters in Silicon Valley in November 2013..

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In Dubai, there are no suburban dinosaurs so we need to look at the nature of workplace and transportation in the Middle East and the ways in which the region might cope should the current pace of development continue

Douglas Langmead

CITIES • TRANSPORT INFRASTRUCTURE • COMMERCIAL PROPERTY

Work and displace - UAE's long-distance commuters

Paul Carder's blog "To the Heart of the suburban dinosaur" explored the impact of agile working on the "dinosaurs" of large-scale, single purpose office buildings. In the western world, these behemoths emerged in industrial office estates, driven by the perceived benefits of having office workers agglomerated in order to achieve efficiency of communication and dissemination. The business practices and technologies that underpinned these buildings have evolved and improved and many are in the process of being re-purposed.

Things happen on a grander scale than that in the Middle East, where the mantra is "if the land-use doesn't fit the land, make more land." Here, the patterns of work and place have evolved differently from the west, and at a much faster pace.

Creeping tides of development have spread rapidly out from the centres of traditional trade and commerce to vast tracts of new development, driven by ambitious programmes and an awareness of the need to build a society that will endure and prosper long after the world's dependence on fossil fuels has passed. For developers, this has meant wave after wave of semi-government and government estate developments, some founded on single-purpose development in the tradition of the Souq, leading to Dubai's showcase projects of the early 2000's - "Internet", "Gold" "Media" and similar estates that were proclaimed "Cities" (only "Knowledge" is a "Village"). The logic and lifestyles of creating huge mixed use developments, both onshore and in colossal reclamation projects offshore, have seen various models of work and place evolve.

Offshore reclamation projects have increased Dubai's 1975 coastline by about 180km, adding (as of 2014) about 70km² of prime coastal land of which less than a fifth has been fully developed. The ultimate vision prior to the global economic crisis was to create more than 520 km of new coastline. Those plans have been scaled back, but not abandoned.

The hourglass shapes of the two Palms (Jumeirah & Jebel Ali) effectively funnel all access through a few narrow causeways, with travel distances of up to 16km just to reach the main coastal highway leading to other destinations. The City Metro that was completed just four years ago is already unable to cope with passenger numbers, even with trains running at 2-minute intervals at peak hours. A monorail runs the length of Palm Jumeirah, but terminates 1km short of a metro station and is hence used only by tourists and not commuters.

These disconnects arose as a result of the incredible pace of development, constantly changing aims and structure of the development authorities, and inability to coordinate all the changes in a very short space of time. Faced with commuting distances of more than 50km to central Dubai an alternative is required for places to work closer to home, or work practices that reduce the dependency on a daily commute.

Jumbo caravanserai

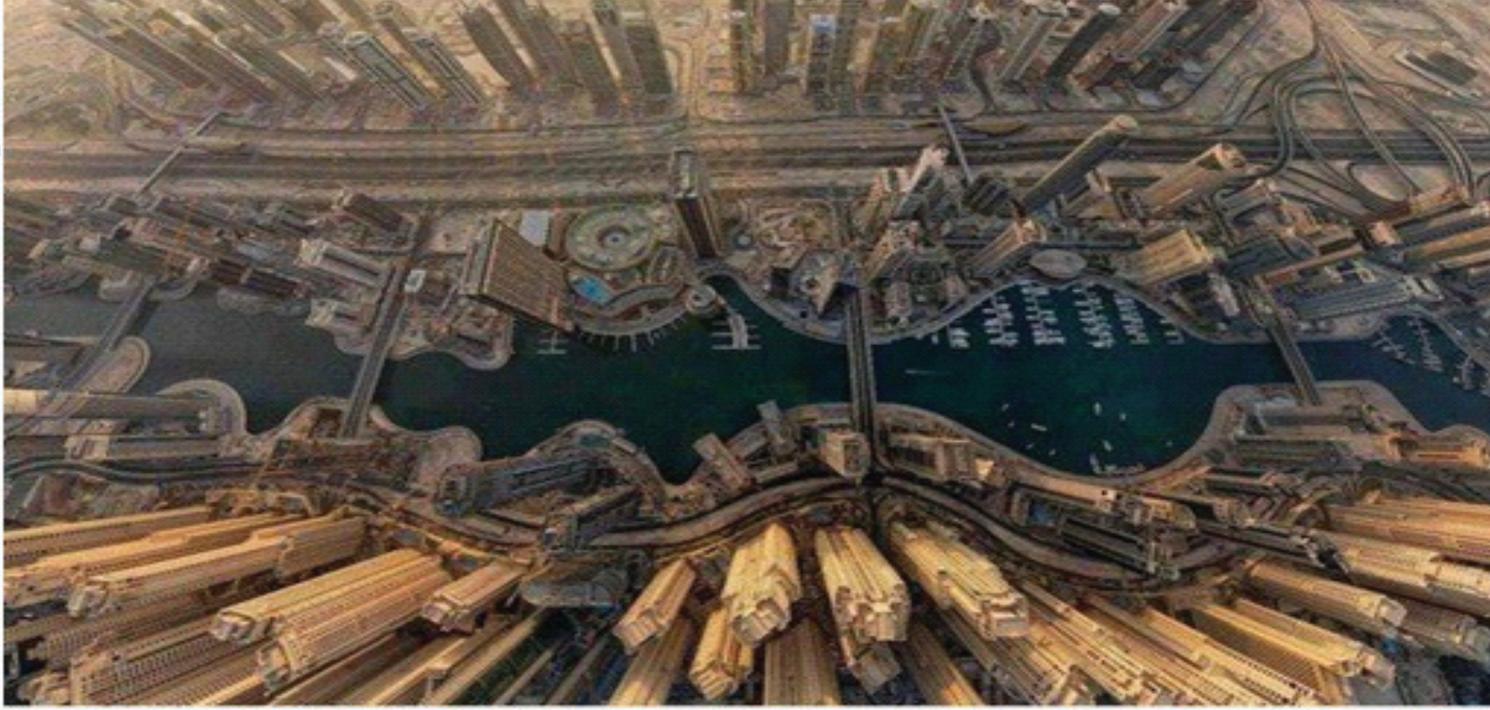
The primary form of transport in Dubai is not the car - it is the aeroplane. Dubai has reinvented itself as a caravanserai at a major crossroads of global travel. Dubai International toppled Heathrow as the world's busiest international airport in 2014. Passenger traffic at Dubai International and Al Maktoum International combined reached 71.3 million last year. Traffic for the two airports is expected to exceed 126 million by 2020 and 200 million by 2030. The vast majority are on their way to somewhere else, but many stopover or commute to nearby Gulf states: passenger growth is averaging close to 10% annually. An extension of the Dubai Metro to link the two airports in time for Expo 2020 has recently been announced.

All those planes mean work and revenue. Dubai Duty Free recorded annual sales of US\$1.9 billion in 2014, expected to rise to US\$2.1B in 2015. Add to that revenue from sister international airports in Abu Dhabi, Sharjah and the brand-new, 10-runway Dubai World Central Airport and you begin to appreciate what a driver travel and tourism is for the UAE economy.

75% of the population are expatriates, and all of them came by plane, leave by plane and return to their home countries or on holiday annually. Work is spread across the region. On a typical day there are 65 flights on regional airlines between Dubai and Doha, just 375km away in neighbouring Qatar. Hundreds of passengers on those flights are business people, plying their trade in both countries. The face-to-face nature of business in the Middle East dictates that business transactions that could easily be managed over the internet are instead conducted over the length of a day, with six-hour travel and transfers on top.

Population grows but traffic flows struggle to cope

Since 1975, Dubai's population has grown from just over 200,000, mostly local citizens, to nearly 2.2 million, a tenfold increase in population and a shift in demographics to the point



where UAE citizens are now outnumbered 4 to 1 in the urban centres, and for the most part wouldn't have it any other way.

Expatriates feel welcome here. "The National" daily newspaper reported in February 2013 that the most populous neighbourhood in the emirate was Muhaisnah 2, a labour camp area known as Sonapur, where there are more than 3,000 men for each woman. Muhaisnah 2 contains about 8% of Dubai's population in 5.5 square kilometres. In residential suburban areas, populations are more evenly balanced, with 29 boroughs having a majority of females, but in far lower overall numbers.

For the UAE, immigrants are not a problem – they are a necessity, and are made to feel welcome. Subject to local rules, and expats can own property (but not land), drink, smoke, dress immodestly, eat pork bought in local supermarkets, educate their children in schools with their home country curriculum, get access to government sponsored healthcare services, attend church and commemorate Anzac Day in public. Generally speaking, expats don't pay income tax, but pay as they go with rates and lifestyle choices. The UAE's multicultural blend of ethnicities, faiths, religions and lifestyles works pretty well.

A peculiarity of the economy is that the armies of blue-collar workers remit 90% of their salaries to support families back in their home countries, whereas the higher-paid white-collar workers typically see the vast majority of their earnings allocated to the high costs of living and the luxury lifestyle that attracted them to Dubai in the first place.

Need more buildings? Make more land!

In the period from 2002 to date, the pressure to build and expand in Dubai has led to vast offshore reclamation projects – these have expanded the landmass offshore by almost the same area as developments onshore. In the boom years from 2003-2008, the map of Dubai was akin to an advent calendar – every couple of months, another swathe of the map would be lifted with the announcement of the release of another off-plan development, fuelled by a gold-rush mentality that saw properties changing hands numerous times at ever-increasing values, often before a sod had been turned.

The prevailing "build-to-sell" mentality led to commercial buildings being completed to shell & core stage, often years in advance of the infrastructure needed to make them viable. Some areas, with good controls and management, were successes. The less scrupulous developers riding the coat-tails of the boom were left with buildings of average quality, unable

to attract companies amidst a glut of available office space.

Following the bust, many buildings were re-purposed, sometimes with disastrous results. High-rise buildings designed as apartments were converted to office use – successful in some, but in others the tenant loads on occupied floors meant that the domestic-capacity elevators could not cope with peak loads, leading to queues of office workers snaking out the lobby doors and into the streets.

As many mid-level staff in offices and retail could not afford the rental premiums of living in Dubai, many preferred to locate in Sharjah, an adjacent emirate that did not have the roads infrastructure to cope with huge flows of cars back and forth every morning and evening. In 2006, before the roads infrastructure caught up with progress, it was not uncommon for residents of Sharjah to leave for work at 3:30am to beat the traffic, and sleep in their cars until it was time to start work.

For those living in Dubai's offshore developments, given the option of long commutes to high-rise offices and costly parking, or working off a handheld device from a villa, apartment or serviced business centre overlooking a beach, Dubai's office workers of the future are going to opt for working close to home. With yet more reclamation still to come, the already overloaded Shaikh Zayed Road simply won't be able to cope.

Large tract projects in Dubai's hinterland are of equal magnitude – and there is no sign of slowing down. The Dubai Statistics Centre estimated that there were 1,041,705 daily visitors to Dubai last year – people who travel for work, leisure or tourism but live elsewhere, up 2% from the previous year.

Every working day, vast tides of traffic clog the highways linking Abu Dhabi, Dubai and Sharjah. Tired workers face a nerve-wracking high-speed 150-200km commute each way on congested 8-lane highways with a legal maximum speed of 140kph, slowing to a crawl on the exit and arrival into each city. Accidents are frequent, adding to the risk, congestion, frustration and delays, reducing the effectiveness, efficiency and happiness of all those who face the daily slog.

The counterbalance to all this is an incredibly far-reaching long-term vision that allowed it all to happen in the first place, and a willingness to redevelop as necessary to ease pressure points of transportation and infrastructure. By 2050, Dubai and Abu Dhabi will be satellite cities feeding Kirzad Industrial City, the world's largest fully computerised container-handling port and an associated industrial zone spread over 418KM² which straddles the main highway between Abu Dhabi and Dubai.

This will become a hub for manufacturing, logistics and trade across a number of sectors, creating prosperity and a lasting legacy for future generations due to a pioneering mindset and a meticulous approach to planning and execution.

Agile Working

Organisations nowadays are diverse communities of people strung together by technology for a common purpose; there is no longer such a pressing need for people to be in a common place to achieve that purpose, and the trend to the future will release people to work effectively in places that are not defined by structure, but by communication networks.

Signs of the end of the era of high oil prices are already at hand. In just a matter of months, the price of a barrel of oil dropped from more than \$100 to about \$70, and petrol is now cheaper than it has been in years. Customs of closely guarding information, mistrust of cloud computing, and unreliable internet services held back the onset of the agile workplace, however that is rapidly changing as global practices of e-commerce and communications become more widespread. The latest mobile phone and the trendiest app has become a must-have for locals and expats alike.

Qatar and Dubai never fail to excite

The smaller, but richer, State of Qatar faces even greater problems of commuting and transportation. Having spent a couple of days gridlocked in Doha, Qatar, where the entire urban infrastructure is being ripped up and reconfigured for the 2022 World Cup, any measure that reduces what should be a 15 minute-max commute down from 90-120 minutes, each way, in any direction has to be a massive leap forward in productivity, worker satisfaction and stress reduction. Dubai was in the same position eight years ago, but now has urban corridors that drain the traffic to dormitory suburbs. Qatar's ring roads create loops with no means of relief, and the urban centres of older European cities face the same problems. Mobility of information makes us less dependent on the inefficiencies of transportation.

What does all this say about 'conglomeration economics' and quality of life? Commenting on the pace of development on a visit to the UAE in April 2013, Mayor of London, Boris Johnson, declared London an honorary member of the federation. "There are so many people from the UAE in the Knightsbridge and Mayfair areas that over the summer I have the honour to be the mayor of the eighth emirate."

The unexpected outcome to all this is that Dubai has quite deliberately chosen a path of planned development that will sustain the economy in the post-oil era. Abu Dhabi is actually the home of the Federal UAE Government and the oil-rich emirate, as oil has never contributed more than 7% of Dubai's GDP. Many of Dubai's new communities are well-planned, multi-faceted combinations of commercial, residential and retail facilities with extensive leisure, lifestyle and entertainment opportunities - none more so than the immensely successful conglomeration of Dubai International Financial Centre, the Burj Khalifa Precinct and Business Bay.

Multinationals have increasingly chosen to centre their regional operations in Dubai, and have the opportunity to

“...Green rated offices don't attract rent premiums yet, but they are becoming the default standard for many companies and hence making the dinosaurs of more traditional buildings less attractive...”

introduce contemporary notions of work and place to their glittering HQ Buildings. Environmentally rated offices do not attract rental premiums as yet, but they are becoming the default standard for many companies and hence making the “dinosaurs” of more traditional buildings less attractive. Many smaller companies, my own included, have adopted agile work practices, working instead from locations that are convenient for ease of travel and closeness to clients for that all-important “face-time”.

Boris Bikes are not the answer to the summers in the Middle East. However the future is likely to see better connectivity of urban clusters with more public transport, urban planning that reduces or eliminates the need to communicate, and systems of work and communications that replace the traditional practices of face-to-face communications **W&P**

i Douglas Langmead

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There is still little research on the relationship between leadership and the office environment. One of the first studies examines how the office environment influences employees' perception of management

Christina Bodin Danielsson

OFFICE DESIGN • MANAGEMENT

The impact of office design on the view of management

Office buildings are used to demonstrate economic strength and belief in the future, but also to express corporate culture. The use of architecture for branding is based on the idea that architecture helps people recognize the organization and position it in their minds (Hatch & Schultz, 1997).

Recently, an interest in using office architecture as a tool for internal branding has emerged, due to its potential influence on employees' behaviour (Appel-Meulenbroek et al. 2010). However, despite this, we have not seen any interest in office design from a leadership perspective. Therefore, I and two colleagues Cornelia Wulff and Hugo Westerlund, set out to investigate if the office type the employee works in has any influence on their perception of the closest manager and their relationship to the manager.

The results of the study: "Is perception of leadership influenced by office environment?" (2013) are presented here.

Leadership

Leadership can be defined as a process whereby an individual influences others to achieve a common goal (Bryman, 2004). To motivate members to perform at high level is a primary task of a leader (Kozlowski & Klein, 2000). That leadership is related to performance (e.g. Lok & Crawford, 2004; Rosete & Ciarrochi, 2005; Ugboro & Obeng, 2000) is established. But it is also related to employees' job satisfaction and motivation (Locke & Henne, 1986; Lok & Crawford, 2004) as well as health status, stress levels and sickness absence (Nyberg et al., Kivimäki et al., 2003; 2008). It is by virtue of this, combined with its relationship to employees' organizational identification, commitment and turnover (Testa, 2001; Tett & Meyer, 1993) that leadership is recognized as a crucial factor for organizational success.

Historically, leadership research has focused on personality traits associated with successful leadership (Nygren, Bernin, & Theorell, 2005). However, over the past few decades, the focus has shifted towards the relationship between leaders and subordinates, including leadership behaviours and styles, as

this has been found to highly determine managerial success (Hart & Quinn, 1993). As a result, theories about leader-member exchange (LMX) and empowerment have been developed (e.g., Graen & Uhl-Bien, 1995; Spreitzer, 1995).

Office design's influence on employees and organizations

Office architecture's effect on a variety of factors which impact on organizations has been acknowledged in research. It has for example been found that factors important from an organizational perspective such as employee health and well-being (Bodin Danielsson & Bodin, 2008, 2010; de Croon, Sluiter, Kuijer, & Frings-Dresen, 2005), and sickness absence (Baldry, Bain, & Taylor, 1997; Bodin Danielsson et al., 2014) are affected by types of office design.

Also factors more directly related to organizational success such as levels of performance and collaboration (e.g., Becker, 2004; Becker & Steele, 1995; Brill et al., 1984; Heerwagen et al., 2004), and creativity (Dul & Ceylon, 2010; Mitchell McCoy & Evans, 2002) have been found

to be related to architecture. This is explained by the fact that distances and layout play an important role for both interaction and relationships (Conrath, 1973; Estabrook & Sommer, 1972). It has for example been found that daily interactions in an office often do not reach further than on average 18 metres from the employee's workstation (Sailer & Penn, 2009). Who you sit near also determines who you become friends with (Szilagyi & Holland, 1980), which in turn may be related to the fact that tangible support in social networks significantly decreases with distance (Mok & Wellman, 2007).

Being able to hear and see your manager easily from your workstation will also determine how friendly you perceive your supervisor (Crouch & Nimran, 1989). This, combined with the fact that managers rely heavily on face-to-face spontaneous and unplanned meetings (Kotter, 1982) tells us that office design has some impact on leadership. We know however nothing about what role different types of offices play from a leadership perspective.

“...Historically research has focused on personality traits associated with successful leadership but over recent decades the focus has shifted towards the relationship between leaders and subordinates...”

Office design as a strategic management tool

Architecture has, as described above, mainly been used by organizations for external branding because of its strong symbolic value. But due to the recognition of its impact on factors vital for organizational success, interest has grown in utilising it for internal branding. The recent trend to use office design to enhance the identity of the organization for staff is to some extent a result of greater competition within the global workplace market in which organizations have to compete for talented employees (van Meel & Vos, 2001).

The modern workforce is generally more flexible and less loyal to their organizations compared to earlier generations, and find it less difficult to change employer and country if the work and new employer appeals. This awareness of the importance of using the office environment for internal branding is demonstrated by Google's use of its offices to attract and retain its talented workforce.

Google's offices around the world are designed to facilitate work in many different ways, with layouts designed to encourage informal interactions between colleagues. For example, Googleplex, the company's headquarter in Montview, California, is designed like a university campus, with restaurants, barbecue areas, facilities for sports, parties and concerts, and even a nursery for the employees' dogs. Alongside this, employees are also offered high quality food for free at the workplace. With this growing trend to use the office as an internal strategic management tool, as illustrated by Google, the lack of research so far into the impact of office design from a leadership perspective is difficult to understand.

A study on perception of leadership in office types

Recognizing office design is one of the tools leaders can use to create and change the structure within an organization, combined with the fact that leadership plays an important role for employees' welfare as well as performance – factors crucial for organizational success – I and two colleagues set out to investigate the office type's possible influence on employees' perception of their closest manager. The closest manager is of specific interest, since he/she directly affects the subordinates' work situation (e.g. Deluga, 1998; Graen & Uhl-Bien, 1995)

Our aim was to adopt a holistic approach to the subject, since the office environment is characterized by physical, psychosocial and organizational factors, which together create the overall environment. This includes attention to aspects such as privacy, spacious openness, group size, i.e. architectural features of the office, but also attention to functional features such as organization of work, various functional and technical (ICT) needs.

In addition, since environmental factors in the office may

have a mediating influence on each other we thought it was better to study the office as a whole instead of based on individual factors. Our approach was consistent with other office research that has found that employees' office type, defined by its architectural and functional features, influence their environmental satisfaction, health status (including stress levels) and job satisfaction (Bodin Danielsson & Bodin, 2008, 2009, 2010). By using a unifying concept such as office type as the explanatory factor in the statistical analysis, the study would give both: a) a general overview of differences in perceived leadership between different office environments, and most importantly b) be easily applicable for practitioners.

The principal research questions of our explorative study on the office's potential impact on employees' perception of managerial leadership were:

- a) Are there any differences in how employees work in different office types?
- b) If so, are there any gender differences in perceived

managerial leadership between men and women in different office types?

Study design

Sample - Our study was based on a nationally representative study of work environment and health conducted every second year in Sweden called the Swedish Longitudinal

Occupational Survey of Health (SLOSH). We used data from the third (2010) wave of SLOSH from which our analytic sample of 5,358 subjects (46.1% men, 53.9% women) derives (For details about the sample see Bodin Danielsson et al., 2014).

Background factors – satisfaction with managerial leadership, being a major component in job satisfaction, is influenced by both job related factors as well as other background factors. Since our study design did not enable control for all possible factors, adjustment was made in the statistical analysis for the following major background factors: age, sex, job rank and labour market sector (private/public) due to their possible impact on employees' perception of leadership.

Outcome variables – in our study employees' perception of the managerial leadership was measured with three different scales.

The first scale, GLOBE (the Global Leadership and Organizational Behaviour Effectiveness Programme) the participants rated the immediate managers' trait with regard to his/hers: Integrity, Autocratic, Self-interest, Team integration and Inspirational leadership.

In the second scale, a Leadership scale from the Stress Profile; the relationship with the manager was measured using ten questions. These include questions such as: "Gives me the information I need", "I get praise from my manager if I have done something good" and so on.

Finally, two additional questions from a third scale, the Modern Worklife was used to measure the relationship with

“... This awareness of the importance of using the office environment for internal branding is demonstrated by Google's use of its offices to attract and retain its talented workforce...”

the manager: 1) Does your manager show care for you? and 2) Does your manager listen to you and take in what you say? All together the three scales used comprised 26 questions.

Office types – the study investigated employees' perception of managerial leadership in the seven identified office types in contemporary office design (Bodin Danielsson, 2007; Bodin Danielsson & Bodin, 2009). Since there will always exist offices that differ from the seven office types, these should be viewed as both prototypes and 'ideals'. The seven office types are: 1) *Cell-office*, 2) *Shared-room office*, 3) *Small open plan office*, 4) *Medium-sized open plan office*, 5) *Large open plan office*, 6) *Flex-office*, and 7) *Combi-office*. The office types are defined by both their architectural and functional features, which go hand in hand and are directly related to each other. The architectural features are the physical framework of the office, of which the most dominant feature is the spatial layout of rooms. The functional features, on the other hand, describe how the office is intended to be used - the functional arrangement and organization of work (For definitions of office types see Table 1 in the online documentation via the references list at the end of this feature.).

However, due to the general purpose of the large SLOSH survey, we could only check whether the offices included in the study matched some of the criteria that define the different office types.

Characteristics of the participants in the study

The descriptive analysis of participants in the study showed some interesting characteristics of the sample. We found that the proportion of women was similar across office types, although there was an over-representation of women in general among the participants.

Regarding age distribution, relatively few participants belonged to the younger age group, i.e. than 34 years old. Most participants in all office types were middle-aged, i.e. 35-49 years old. The highest proportion of young employees was found in flex-offices, although most participants in this office type were middle-aged. The highest proportion of older employees was found in cellular offices. The descriptive analysis also showed that men had higher incomes than women, irrespective of which office type they worked in and moreover that the majority of men worked in the private sector, and the majority of the women in the public.

What did the study then say?

According to all three scales in the total sample, the results showed that there was a significant overall association between office type and prevalence of good perceived leadership. This applied to both men and women separately when perception of leadership was measured using two

“...According to all three scales in the total sample, the results showed that there was a significant overall association between office type and prevalence of good perceived leadership...”



Google Amsterdam

of the three scales; GLOBE and Modern Worklife. When, in the first analyses, we looked at how employees in different office types rated their closest managers we found differences between office types:

Shared-room office, for employees in cellular offices we found significantly lower odds of good managerial leadership across all three measurement scales. When we looked at men

and women separately, the association was statistically significant only among male employees, although the trend was similar among female employees as well.

Medium-sized open plan offices, here the employees had higher odds of good managerial leadership than employees in

cellular offices expressed by significantly better odds for good leadership when rated under the GLOBE-scale. For the other two scales we found a similar tendency. Looking at the men and women separately, we found no statistical significances.

Flexi-offices, in this office type we found significantly lower odds of good (i.e. it was poorer) managerial leadership than amongst employees in cell-offices - using the Modern Worklife scale. According to the other two scales there was also tendency for leadership to be less good, though not as significantly lower, while the estimates for men and women were similar.

Large open plan office and combi-office, for these two office types there were no significant differences in the perception of managerial effectiveness, in comparison to the cellular office, our reference category in the analysis.

If we summarize the results of the study, it indicates that the office type per se has a significant impact on employees' perception of managerial leadership. In two of the scales - GLOBE and Modern Worklife - used to measure employees' perception of their immediate supervisors managerial leadership, the statistical significance found in the analysis of the total sample also appeared in the gender separate analyses.

As we looked at the office types individually we found a significantly higher risk of a perception of poor managerial leadership amongst employees working in shared-room offices than among employees in other office types. This higher risk of poor perception of leadership in shared-room offices remained among male employees for all three scales used to measure the

perception of managerial leadership. Among female employees the significantly poorer leadership rating remained only when we used the Modern Worklife scale to measure the perception of managerial leadership.

Applying a positive perspective to managerial leadership instead, our results showed a significantly higher rating of good leadership amongst employees in medium-sized open plan offices than in other office types when we used the GLOBE scale. For the other two scales we found a tendency to have a better perception of managerial leadership in this office type than others.

How should we then interpret the results?

The study shows clear differences in how employees in differing office types perceive their immediate supervisor. Since these differences remain in the statistical analysis after an adjustment for background factors, which in themselves have an impact on the individual's perception of managerial leadership, our results indicate that office type per se, defined by its architectural and functional features, may play a role for managerial leadership.

Table 2 (see references) presents a graphical illustration which summarizes both the statistical significances and tendencies of the office type's impact on the perception of managerial leadership.

The illustration reveals a pattern of poorer rating of managerial leadership among employees working in shared-room offices, tightly followed by those working in flexi-offices. It also shows that employees working in medium-sized open plan offices are more satisfied with their immediate supervisors than other employees.

Employees in other office types are found in between these three described office types. An additional aim of the study was to investigate the possible gender differences in the perception of leadership within different office types. No clear gender differences were found, with one exception – in small open plan offices. In this office type, men in contrast to women rated the managerial leadership better than in cellular offices, the reference category. Instead women reported poorer managerial leadership in small open plan offices than in cellular offices.

If we allow ourselves to speculate on why differences in perception in managerial leadership differs between employees working in different office types, I and my colleagues believe some explanations can be found in the leadership theory called LMX (leadership-member exchange).

The LMX theory is occupied with the reciprocal relationships between supervisors and subordinates, and explains different organizational outcomes that result. It shows a special interest in the relationships between the supervisor and various members of the group, and how differences in relationships

develop. According to the LMX theory, low quality leader-member exchange is characterized by formal and impersonal interactions, whereas high quality LMX instead involves trust, mutual liking, and respect between leader and member (Graen & Uhl-Bien, 1995).

From the perspective of LMX and social psychology, could the differences we found between employees in different office types be explained by the architectural and functional features that define the seven office types? These features may well, in our opinion, influence the employee's psychological experiences of leadership, but also group mechanisms, which in turn affect the employee's perception of the manager's leadership, and possibly how the actual leadership is carried out.

According to described hypothesis, the features of an office type can either hinder or improve the relationship between managers and co-workers, since the aural and visual presence of the manager depends of the features of the office type.

The same features could, however, also be positive for the employees if there is trust and equal balance between the manager and co-worker, since they also enable personal control and independence for the employee.

To exemplify, in a cell-office the manager is visually less

present to the employees due to the fact that all employees work in private offices. The architectural design of cellular offices force managers and employees to actively seek each other out for one-to-one meetings, otherwise they will meet only in formal meetings or when encountering each other in common areas.

However, according to our results, the non-visual manager in this office type is less of a problem. The reason for this could be that there is a high degree of personal control in cellular offices which has a positive influence on both environmental satisfaction and job satisfaction (e.g. Bodin Danielsson & Bodin, 2008, 2009; Duvall-Early & Benedict, 1992; Lee & Brand, 2010). This compensates for the possible shortcomings of a visually absent leadership. In shared-room office the audio and visual absence of the manager seems to be a problem though.

Why this is the case, we can only speculate. It could be due to the dynamics of groups when two to three members are situated away from their manager. These in turn may encourage the development of sub-cultures, which in turn risk becoming self-sustaining, autonomous and distanced from the management (Sundstrom, 1986).

These characteristics may consequently lead to possible misunderstandings and potential problems with the management and organization. That the manager, when entering the shared-room office is outnumbered by the two to three people working in the room may also lead to a power imbalance. This could have negative effects, both on how the

“... The features of an office can either hinder or improve the relationship between managers and co-workers since the aural and visual presence of the manager depends of the features of the office type...”

employees perceive the leadership and how the manager behaves.

If we look at the positive perception of managerial leadership instead, the good results among employees in medium-sized open plan offices with 10-24 people would, when applying the hypothesis described above, suggest that this office type involves different group dynamics from shared-room offices.

This means that an office type featuring a medium-sized group of employees sharing workspace together with the manager does not foster subcultures, but rather facilitates interaction, spontaneous meetings and reduces status barriers between leaders and subordinates.

This theory is supported by research that has found that physical proximity to be crucial for both communication and friendship to develop between organizational members (Festinger, Schacter, & Back, 1950; Szilagyi & Holland, 1980). Our hypothesis is that the positive perception of managerial leadership is explained by the fact that manager and co-workers often share workspaces in medium-sized open plan office is supported by research that has found that employees with a visibly and audibly present manager perceive their supervisors as more friendly (Crouch & Nimran, 1989).

If our hypothesis regarding the poor perception of leadership in shared-room office is correct, a successful strategy to counteract the development of barriers between managers and employees in this office type could be to actively work on forging one-to-one interaction between employee and manager. It may also require having joint meetings with group members who share space in the manager's room and by applying an office design that encourages meetings in common areas.

Regarding gender differences, the described study found no clear differences between how men and women perceive their immediate managers in the different office types. This being said, some differences found are worth mentioning. One such difference is the poorer perception of leadership found among male than female employees working in shared-room offices. This could possibly be due to a higher risk of sub-cultures to develop among men than women, an explanation which finds some support in that men are more involved in workplace conflicts than women (Swedish Work Environment Authority, 2012).

The indications there may be more likelihood of better perception amongst men in small open plan offices than women is not evident however. Perhaps women are more sensitive than men to the social control that more easily develops in the small open plan office due to its group size than in the other two traditional open plan offices – medium-sized and large open plan office.

Summary

The presented study indicates that there are aspects in the seven office types that influence employees' perception

“...A successful strategy to counteract the development of barriers between managers and employees in shared offices could be to actively forge one-to-one interactions...”

of the immediate manager and possibly the managerial leadership per se. If so, the result could be due to employees' personal experiences and group dynamics, but also to the fact that the actual leadership style is influenced by the choice of office type.

This means then that specific leadership styles are more or less successful in the different office types. For example might a more extreme or demanding office type encourage a more “extreme” leadership style. On the other hand, may certain organizational cultures attract or retain certain types of leaders and employees, in other words create a selection effect that may be intentional by organizations?

Based on the results of this study we can however not be sure if any of the explanations I here present hold true, they are only speculations. The fact is that both perception and exercise of managerial leadership depends on many different factors. In addition to this, leadership operates at both the individual and group level, as well as the organizational level. The presented study was a first, initial attempt to examine the relationship between office type and managerial leadership. We now need further studies on the relationship between environmental factors and leadership in offices – both leadership styles and perception of managerial leadership, that consider leadership's importance for both the welfare of employees and the success and survival of organizations. **W&P**

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A comprehensive list of all the references for this article including tables and data are available at <http://workplaceinsight.net/workplace/workplace-resources/>

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