

The Innovation Deficit: The importance of the physical office post COVID-19

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ABSTRACT

After more than a year of dealing with the fallout from COVID-19, much has been learnt about the benefits of working from home. There is plenty of evidence for people wishing to retain at least some of the flexibility that working from home has brought post-pandemic. However, what has also been shown is that a well-designed office is more often better than home at supporting some types of activity, especially those involving socialisation and collaboration with others. This paper takes stock of what the office is good for and argues that without opportunities to meet in unplanned ways face-to-face, innovation, the life blood of many businesses, is at risk. In so doing a different way to think about the post-pandemic office is proffered; one that is designed to realise the benefits that being physically co-present can bring and thus avoid the so-called innovation deficit. By using this way of thinking, this paper concludes with an evaluation of how some organisations are already 're-imagining' their post-pandemic workplaces.

KEYWORDS

COVID-19; workplace strategy; workplace design; face-to-face interaction; unplanned encounter; innovation

A FATEFUL MEETING AT THE PHOTOCOPIER: THE STORY OF KATALIN KARIKO

Dr Katalin Kariko is one of the highly talented scientists behind the mRNA technology that has made the Pfizer-BioNTech and Moderna COVID-19 vaccines possible. For many years Dr Kariko languished as an under-funded post-doctoral fellow. It was in the early 1990s that she established that mRNA could be used 'to instruct any cell to make any protein at will'.¹ She was convinced that the method could be used in treatments for a wide range of conditions, but without research funding she could get nowhere. After a series of temporary research posts, she was once again looking for a lab and research funds to continue her work, when a chance meeting at the photocopier changed everything. She struck up a conversation with a fellow academic, Dr Drew Weissman, who had funding to develop a vaccine for HIV. Their collaboration provided the building blocks for the recently developed mRNA COVID-19 vaccines now in use. Once the COVID-19 genetic sequence was published by Chinese scientists in January 2020, it took BioNTech a matter of a few hours and Moderna just 48 hours to design their vaccines. All of this resulted from a chance meeting in the office, at the photocopier.

With so many people working from home (WFH) in the UK and other countries over the last year as a result of the global COVID-19 pandemic, that kind of chance encounter will not have been possible. Existing research points not just to encounters at the photocopier² to support such social contact and interaction, but also to places such as the coffee machine, corridors and staircases, in front of elevators and in the canteen queue³. Clearly all of these opportunities are significantly diminished by the prevalence of WFH.

This is the context in which this article is written, specifically in relation to the way people and organisations will want to work in the future and how they will see the role of the office, particularly considering the innovative capacity of organisations.

WORKING FROM HOME: THE LESSONS SO FAR

With that in mind, what has been learnt during the pandemic about WFH compared with working in the office? There are now several sources of data about the WFH experience. A majority preference for continuing with at least some WFH post pandemic is clear, indicating high levels of satisfaction for many who have been WFH. However, the reasons for this are multi-layered and the role of the office as a place for social contact is evident in the research findings.

According to a Leesman survey of 48,000 home working respondents,⁴ a large majority, 85%, want to continue to work remotely for two or more days per week. But their data also shows that preferences for how much time people want to spend working from home or from the office are directly related to the overall experience of working from home

compared with the previous experience of working in the office. These experiences are measured by the Leesman indices H-Lmi and Lmi which capture on a scale from 0-100 the degree to which the work environment supports employees.⁵ So as Leesman highlight, 73% of those 15% wanting to work in the office for most of the week report a poorer experience working from home than in the office. The converse is also true, 76% of those wanting to work in the office for 0-1 days per week have a better home working experience than they did in the office. Of course, it is intuitive for this to be the case, but it is worth noting that the difference in experience between home and the office measured in this way can be driven by both an inadequate set up at home and by a poor workplace design in the office.

Leesman have helpfully interrogated their data to establish the activities that are seen to be less well supported at home by those wishing for significantly more time in the office. They conclude that the greatest difference between those who want to work from home the most and those who want to work from the office the most is how well their work environment support collaboration activities. Respondents who favour home working overwhelmingly agree that their environment supports learning from others (81%) and collaboration on creative work (85%) while those who favour the office disagree with only 48% and 52% respectively reporting the home environment as supportive.⁴ Leesman also flag that those wanting to return to the office feel significantly less connected to their colleagues (45% instead of 85% for happy WFHers) and also less connected to their organisation (42% versus 83%).

The difference between the set up at home and the design of the office and what people favour, is demonstrated in one of Leesman's case studies – the EDGE in Amsterdam, coined as 'the smartest building ever constructed'⁶ with a Leesman+ accreditation, scoring an Lmi of 81.7. After deploying the Leesman home working experience assessment in April 2020, the EDGE achieved an overall H-Lmi score of 62.7, showing a large gap between employees' home and office-based experience. Employees reported that they found the office more supportive when it comes to knowledge sharing and informal social interaction. In addition, the EDGE office design offers a variety of work settings, to support a wide range of tasks and working preferences including focused work away from a desk. In comparison, people are unlikely to have multiple work settings at home to support different work styles and activities suggesting why the home environment was rated as less supportive for focussed work away from the desk. This case demonstrates that when designed well, the office can be more preferable than home.

Another survey conducted in October 2020 with 2,033 office workers across 10 countries spanning all major industries, this time by JLL paints a similar picture.⁷ 24% of respondents wanted to return to working exclusively in the office while 50% wanted a hybrid approach between the office and home. 70% of employees reported that the office environment is more conducive to team building and being supported by their

management team. The top two expectations for the post-pandemic office were for spaces that foster socialisation and provide a direct connection to the outdoors. One in two employees also thought that new focused workspaces to support meetings with colleagues working remotely would significantly boost their experience in the office.

In summary, there seems to be a divide between those who have come to prefer remote work to a return to pre-pandemic office life, and those who have predominantly missed the collaboration potential, the sense of community and the chance encounters that the physical office space might bring, especially if their previous experience of office working was in a well-designed environment.

THE LINK BETWEEN UNPLANNED ENCOUNTERS AND INNOVATION

Having argued that WFH has resulted in a lack of unplanned encounters across many organisations over the last year, this of itself might not be problematic. However, there is well documented evidence for the links between unplanned encounter and innovation and that is why the lack of unplanned encounter should be concerning for those responsible for the long-term success of their organisations.

The mechanism between unplanned encounter and innovation encapsulates the idea that you do not know who you need to know and therefore if reliance is placed on planned meetings and conversations, the opportunity to gain new knowledge by accident will be missed. Thomas Allen argued that the best sources of information to sustain progress come from within the organisation but are more likely to come from outside someone's immediate team.⁸ Allen investigated the problem-solving capacity of R&D organisations in engineering in the US by looking at the communication networks of successful teams. He found that on complex projects, the inner team could not sustain itself and increased communication within a team was not associated with higher problem-solving performance. Instead, high performing teams tended to consult with colleagues outside of their team much more frequently, which led Allen to the conclusion that increased communication between R&D groups was strongly related to project performance.

Ronald Burt confirmed this 'innovative advantage of brokerage'. Brokerage defines the position of a person bridging between different subgroups of a network. Burt argued that "*opinion and behaviour are more homogenous within than between groups, so people connected across groups are more familiar with alternative ways of thinking and behaving*".⁹ In tightly networked clusters of people, discussion of redundant information is likely to be prevalent; therefore, it is in the exploration of the holes around and between these tight networks where an individual is also likely to find greatest benefit in bridging the hole to another individual and/or network to access non-redundant information and resources.

Mark Granovetter proposed a similar concept, i.e. the strength of weak ties in providing new knowledge.¹⁰ Granovetter made a basic distinction between the respective functions of strong and weak social ties and pointed especially to the importance of the latter. He defined a tie and its strength as “*a combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie*”. He stated that the stronger the tie between two individuals, the higher the proportion of common friends due to the time committed to each friendship and similarities that connect friends. While Granovetter originally applied the idea of the strength of weak ties to how people found new jobs, it is easily applicable to how colleagues relate to one another within organisations and teams.

What Allen, Burt and Granovetter ultimately highlighted is the importance of gaining information from others outside of one’s tightly knit circle, which was argued to lead to good ideas, innovation and a competitive advantage for high performance.

While other recent scholarly work has pointed to the importance of strong ties for problem-solving¹¹, or the role of shifting between intensive phases of reaching out to others (brokerage) and maintaining close networks (closure)¹², or the way in which multiple, intertwined social networks are associated with genuine novelty¹³, research agrees that wide-reaching, diverse and multi-layered connections matter for organisations’ innovative capacities.

So, how does office space come into the equation? It is argued here, following Penn and Hillier, that “*innovation requires probabilistic interaction*”¹⁴ and that physical office space provides an ideal medium for unplanned face-to-face encounters.

THE ROLE OF SPACE FOR UNPLANNED ENCOUNTERS AND INNOVATION

Understanding the links between unplanned encounter and innovation is one thing, but for this to be of any practical use in office design, it is crucial to understand how exactly physical space plays a part in this process. Hillier and colleagues argued that buildings provide a mechanism for generating and constraining patterns of encounter and avoidance between groups of people¹⁵. Thinking of buildings in this way allows a view of the office as a ‘machine’ for making contact, not in any deterministic kind of way¹⁶, but by means of bringing people together naturally, as a by-product of everyday paths and movements. In this sense, spatial layouts can support generating weak ties leading to scientific discovery¹⁷, just like in the case of Katalin Kariko. One of the documented mechanisms for this, is the process of recruitment, whereby a building plan brings people into contact with one another. For example, those sitting at desks near global movement flows through a building can recruit passers-by into conversation.¹⁸

Critics might now challenge the importance of the physical office, maintaining that the triple digital revolution of social networking, mobile devices and ubiquitous internet connectivity¹⁹ has not only made WFH during the pandemic possible, it might also render the office as a physical space meaningless.

This paper strongly disagrees for two important reasons: firstly, face-to-face encounters have for a long time been argued to provide rich communication opportunities allowing for rapid feedback, the building of trust in relationships and the development of shared values.²⁰ This cannot be easily replaced by digital communication tools. In addition, it has been argued by social anthropologist Mary Douglas that with physical proximity comes intimacy, whereas greater space means formality. The informality of physical space is again not mirrored in the screen-mediated contact of WFH. Secondly, the COVID-19 pandemic has shown how human contacts under lockdown, stay at home orders and distancing requirements have not only shrunk, but have been reduced to the strongest of strong ties based on kinship, close family and friends, as well as our closest work colleagues,²¹ supported by zoom and other digital technologies. The scheduled nature of digital communication makes spontaneity and unplanned encounter virtually impossible.

This all suggests a link from physical space to innovation via unplanned encounter. If this holds true, it means that the impact of COVID-19 is likely to accumulate what could be called an 'innovation deficit' as the same old ideas are recirculated by people losing contact with their weak ties and not making connections with new people, both groups that might otherwise have stimulated a different way of thinking.

In order to reimagine a post-pandemic office that might be able to recover the anticipated innovation deficit, the next section will offer reflections on relevant design principles that take the link between physical space, unplanned encounter and innovative capacity into account.

DESIGN PRINCIPLES FOR POST-PANDEMIC OFFICE DESIGN

The last 12 months have seen countless policies, guides, predictions and plans for organisations to develop strategies for how best to respond to the COVID-19 pandemic. While early plans to return to the office were characterised by distancing suggestions²² as well as hygiene protocols²³, this paper aims to consider not the pandemic office, i.e. what needs to be done in the interim while COVID-19 is still spreading across different communities, but the post-pandemic office, i.e. the point in the future where we can be reasonably safe from infection. This allows reimagining how and where we might want to work in the longer-term future, thus more widely assessing workplace strategies that organisations might be adopting including the option to continue remote working or following hybrid models. Before going into this evaluation of existing strategies more

deeply, this section sets out to discuss general principles of workplace design that become relevant.

Following the line of argument brought forward so far, this paper contends that the physical office continues to play an important role due to the relationship between spatial opportunities for unplanned encounters and an organisation's innovative potential. The physical office should be utilised to do what it does best: to enable, support and celebrate unplanned encounters and people coming together as part of their day-to-day work processes.

It is widely known that not every office design pre-pandemic was ideally suited to truly bring people together. Quite the contrary. The open-plan office particularly was repeatedly scolded by media reports as lacking privacy²⁴, being noisy and stressful²⁵, but also demotivational²⁶, uncollaborative²⁷ and apparently also sexist²⁸. Insights derived from scholarly research are at times more balanced and nuanced, appreciating both the pitfalls^{29, 30} but also qualities³¹ and opportunities³² of open-plan.

It is exactly along those lines that the physical office and its design are relevant for a post-pandemic future: not necessarily as a panacea, and not as a definitive sole solution no matter what, but rather as a set of opportunities that need to be structured and designed well. The above-mentioned research results from Leesman on the experience of WFH versus working in the office have highlighted how a well-designed office can play a crucial role in the increased desire to return to it.

So, how can an office be well-designed? This is of course an unanswerable question and too generic to be useful. Offices can be designed in many different ways and it could easily be argued that design is less important in itself, but more relevant in its strategic fit³² to support an organisation's strategy, goals, industry norms or culture. To qualify the question along the lines of thought brought forward by this paper, it can be asked how an office can be designed in a way so that it supports unplanned encounters.

In order to answer this question of designing-in encounters, it is helpful to draw upon configurational thinking as introduced by Hillier³³. Consider the four different configurations of a simple system of 3x3 rooms displayed in figure 1, only differentiated by the degree to which each internal partition is either fully closed or allows an opening to an adjacent space. The coloured dot networks included below the floor plans in figure 1 are so called justified graphs, or short j-graphs, which highlight the experience of moving through each system from the outside entrance space (shown in grey). Each room is one node in this spatial network, categorised according to Hillier's ABCD space classification³³: A spaces denominate dead ends; B spaces have one entry and exit; C spaces lie on a single ring; whereas D spaces lie on multiple loops.

While the plans might appear similar at first sight, the coloured j-graphs clearly illustrate the differential qualities of the four structures. Configuration 1 is a linear system with a

majority of B-spaces. Encounters are naturally built into this system as those moving in one direction necessarily meet those going the other way in the linear street. They are also distributed rather equally across most spaces; hence, people occupying spaces along the street will meet others regularly as a by-product of movement, giving rise to the process of recruitment as described earlier. Yet not everyone might move through the whole system. Configuration 2 is tree-like, characterised by a majority of dead-end A spaces. Encounters between people occupying different parts of the system will be limited to the 33% of B spaces, which means a concentrated encounter space with higher likelihoods of encountering others when on the move, but fewer encounter opportunities when not moving. Configuration 3 consists of two loops with a vast majority of C-spaces. A spatial structure like this will mean that not everyone will walk past the spaces others occupy, and when on the move people might walk into the system in one way and out of the system in another, thus limiting encounter opportunities. In contrast to the highly controlled loop configuration 3, configuration 4 is arranged as a grid with a high degree of D spaces, thus offering plenty of local choice of where and how to move through the system. This will create the most distributed and randomised movement flows, resulting in the highest degree of unplanned encounters, bringing people across all spaces together in a serendipitous way.

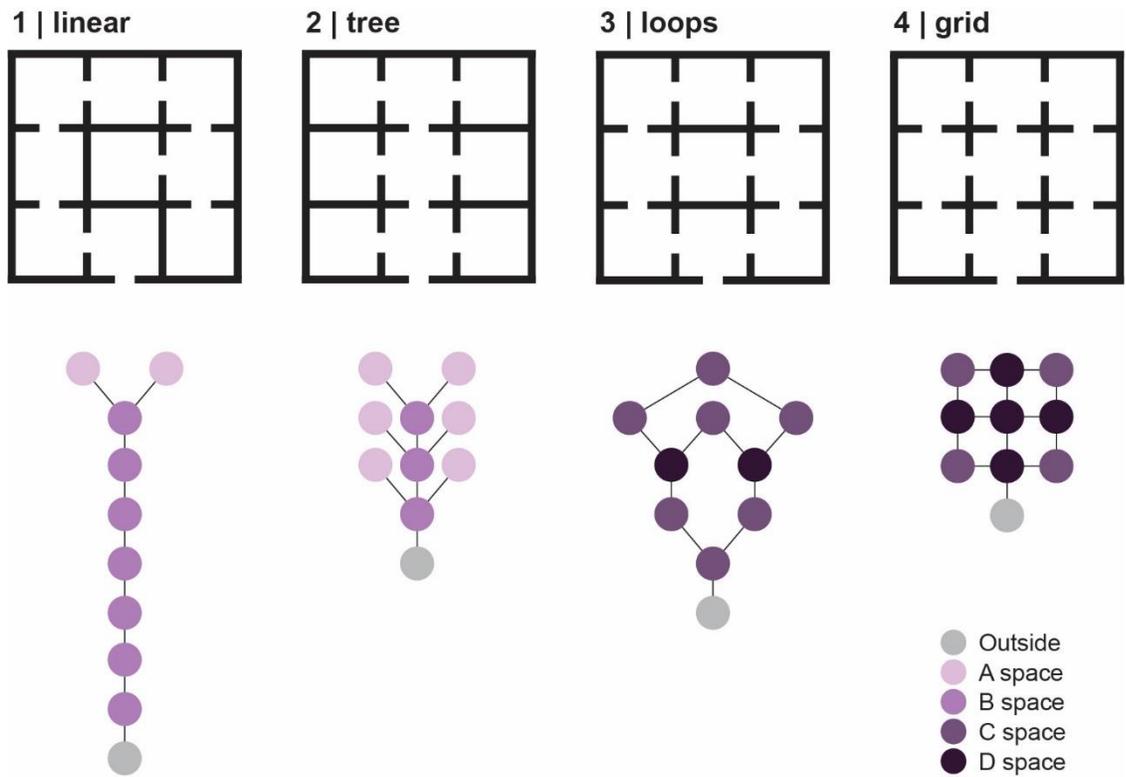


Figure 1: Different combinations of connecting rooms result in distinct spatial qualities and therefore

It is easy to see how these configurational principles – a linear system, a tree, loops or a grid – might result in different encounter profiles across an organisation occupying such an office structure. It could be hypothesized that organisations in grid-like offices would most easily benefit from unplanned encounters and an increased innovative capacity, while organisations in offices designed with loops might experience fewer unplanned encounters. Interestingly, a pandemic office designed with distancing in mind would in fact prefer the loop-intensive configuration 3 due to its natural enabling of one-way traffic.³⁴

Therefore, when and if organisations return to their physical offices, it seems important to assess the degree to which the underlying spatial network structure of the workplace brings people together in unplanned ways.

OFFICE DESIGN POST-PANDEMIC: CASE STUDIES

This final section will focus exactly on the ‘if’ question mentioned above, i.e. whether organisations in fact plan to return to a physical workplace in the first instance. In order to do so, public announcements of organisational strategies with regard to the future post-pandemic office have been gathered and assessed according to three main criteria: firstly, to what degree the plans take changed working preferences into account; secondly, to what degree the plans support unplanned encounters; and thirdly, to what degree the plans support encounters across team or department boundaries, thus including weak ties.

It is important to understand the context in which these announcements of office strategies have been made. We have researched these in May 2021, focussing on the UK. It needs to be acknowledged that our case studies capture one particular point in time, where COVID-19 infection numbers were on low levels and the vaccination progress in the UK provided hope. We also know, however, that the situation and with it organisational choices are likely going to change as time goes by; as the pandemic moves into new stages; as restrictions are loosened or tightened; as others have tried and tested certain models and might have succeeded or failed, providing learning experiences for everyone in this volatile and fast-moving space. We still contend that this kind of analysis within a given context is useful as it provides a means by which organisational choices and their consequences can be assessed.

By applying the above assessment criteria to the public statements made by organisations, a picture of the risk of a continued innovation deficit emerges.

Many organisations have adopted more flexible working arrangements throughout the pandemic, and it is not hard to find companies that are now proposing to make these practices more permanent. Deutsche Bank AG, Standard Life Aberdeen Plc, Lloyds Bank Plc³⁵ and the fashion company the Very Group³⁶ are examples of big employers that are suggesting their staff can continue to work from home between one and three days every

week. These more flexible working patterns are often referred to as a 'hybrid' model in that they are capable of accommodating a mix of home and office working.

The reasons for the widespread adoption of hybrid models are often stated as being self-apparent. The following comment from Tina Lee, Deutsche Bank's UK CEO is typical:

*"Requiring staff to return to the office for five days a week feels to me a little bit like a wasted opportunity."*³⁵

If more flexible working models are the natural response to what has been experienced through the pandemic, it also needs to be asked if organisations are also planning to change the designs of their offices at the same time. The evidence in this regard is that they are, and the reasons given typically reflect an acknowledgement that the type of work done in the office will be different to that done at home. Many organisations are talking about the office being critical for encouraging collaboration. This comment from Sarah Willett, Chief People Officer at The Very Group, is typical of what organisations are saying:

*"We want our people to be productive at home and super collaborative in the office. That's why we've invested in reconfiguring our workspaces"*³⁶

In general, employees appear to welcome these proposals for hybrid workplaces by their employers:

*"I feel a bit guilty about getting the best of both world's because I know not everybody is fortunate enough to work in an environment like this. It's extremely democratic."*³⁷

Trying to understand the motivations for these proposals is not entirely straightforward because it is clear that employers also benefit from the adoption of hybrid working practices. A very significant financial benefit will accrue to organisations that are able to reduce the amount of office space needed to accommodate these models. Estimates for space and cost savings vary but appear to range from 10% to 40%. Many companies have had great financial difficulties, as a result of COVID-19 lockdowns, so looking for cost savings in the future is understandable and sometimes a matter of survival. This can be detected from some of the statements made in connection with the announcements about changes working practices, such as Quinn from HSBC who told Forbes that costly space was a *"waste of real estate"* especially as the offices *"were empty half the time"*.³⁸

Using the lens of the innovation deficit put forward by this paper would suggest that some caution is necessary in ascribing cost saving as the sole motivation. Nevertheless, at the broadest level, organisations appear to be meeting our first criteria; they are taking into account new working preferences to a significant degree.

However, adopting more flexible working practices, is not sufficient to overcome any innovation deficit built up over the pandemic. To understand why, the second and third evaluation criteria also need to be applied. This requires a closer look at some of the details published about spatial design and their potential impact on unplanned encounters, who might encounter whom and how often. As has been argued, this matters because of

the impact of unplanned encounter on innovation. This analysis uncovers three possible issues.

The first issue is a purely mathematical one. Adopting hybrid working practices means some people will work from home that pre-pandemic would have been working from the office. If nothing else changes, this means that there are fewer people in the office at the same able to encounter each other. Of course, any return to the office will result in more opportunities for unplanned encounter than during lockdown and this will do something to address the innovation deficit.

Here we assume nothing else changes, but as we have seen, many organisations are intending to or already have redesigned their offices, for example drinks company Fever Tree has announced the creation of a bar ins its headquarter office³⁹; or Spotify has remarked aiming to redesign their Stockholm office with more soft furnishings to give employees a feeling of working from home, as well as more choice where to work from, not just anywhere, but also in the office⁴⁰. These are just two examples of companies that have taken steps to redesign existing premises following learnings throughout the pandemic. It has also been noted that some pre-pandemic office layouts were good at encouraging unplanned encounters. With more offices re-designed in this way, even the reduced number of people that the hybrid model represents could lead to greater opportunities for innovation than existed pre-pandemic.

This leads to the second issue. The focus of nearly all the re-designs that organisations have announced publicly have been about improving offices for collaboration. This quote from The Very Group is typical of the way organisations describe these spaces:

*“Throughout the campus new zones have been defined using distinctive furniture, carpet and décor to help teams come together in the right places to collaborate”.*³⁶

This implies new spaces designated specifically for teams to collaborate and this is different to designing spaces that foster unplanned encounters. The two are not necessarily mutually exclusive, but there is a danger that if home is the designated place for concentrated work and the office for team meetings, the opportunities for unplanned interaction get crowded out.

The reality of the press reports announcing office re-designs is that very little is said about the whole office configurational design and its purpose. The absence of such language is relevant when considering the second and third criteria for evaluating the potential for post-pandemic offices to mitigate the innovation deficit. The absence of language that suggests plans support unplanned encounter across team and department boundaries may suggest that it is not fully understood or not being considered at all.

The third and final issue relates to the apparent unequal treatment of employees based on their job function. For perfectly legitimate functional reasons, organisations are suggesting that the hybrid models will be applied differently depending on job description and the

need to collaborate with other team members. For example, Deutsche Bank will differentiate its remote working policies according to roles and indicated that traders may have fewer work-from-home days than other staff. ³⁵

Similarly, TP ICAP state that back-office staff could work from home up to two days a week, although he also said the company expects all of its brokers to return to the office when it is safe to do so. ³⁵

Although this is a legitimate functional strategy, when the lens of the innovation deficit is applied, it is an issue because it will likely reduce the possibility of across team unplanned encounter, which, as has already been discussed, is an important component of generating new ideas and innovation.

Despite these issues, two recent trends in public announcements give cause for some optimism in respect of tackling the innovation deficit. Very recently some organisations, that earlier in the pandemic had espoused work from home or hybrid models for the future, have started to change their minds by suggesting that they will return to the office in full.

This more recent trend is typified by this quote from Goldman Sachs:

“That’s a temporary thing. I do think that for a business like ours, which is an innovative, collaborative apprenticeship culture, this is not ideal for us. And it’s not a new normal. It’s an aberration that we’re going to correct as soon as possible.” ⁴¹

Similarly, Barclays have reversed previous announcements by suggesting that home working has run its course; *“I look forward to us being able to welcome colleagues back into the office.”* ⁴¹

Google, Amazon and Microsoft have all said similar things.⁴² Google have set a limit on work from home days at 14 per year. Amazon has described their return to office plans as “office-centric”, whilst Microsoft CEO Satya Nadella, has spoken explicitly about the value of unplanned interaction in the office: *“what I miss is when you walk into a physical meeting, you are talking to the person that is next to you, you’re able to connect with them for the two minutes before and after. That is tough to replicate virtually, as are other soft skills crucial to managing and mentoring.”* ⁴²

The second recent trend is the beginning of the idea that employees might work from many different places. This trend can be seen in announcements made by IWG (formerly known as Regus), a large shared office provider who have said that *“demand for office space has rebounded fastest in smaller towns and cities that are closer to where people live”*.³⁵ One such contract is with Nippon Telegraph & Telephone Corp. who will allow its 300,000 staff to work from home, their own offices or any of IWG’s shared offices.

This trend is also detectable in recent announcements from Spotify who have launched a scheme that gives their employees the freedom to *“work where they work best, wherever that may be”*.⁴³ This trend may result in greater opportunities for unplanned encounter outside of the organisation. Working from a shared office might enable encounters with a

customer, a competitor or an entrepreneur. This has the potential to supercharge the possibilities for encountering a wide diversity of other people and create a post-pandemic office environment that could perhaps help turn the innovation deficit into an innovation surplus.

CONCLUSIONS

This paper has described the mechanisms by which a configurational approach to workplace design can facilitate innovation via unplanned face-to-face encounter. In so doing it is clear that due to the necessity of working from home during the COVID-19 pandemic, there is now the risk of organisations suffering from an innovation deficit. Many organisations are taking the opportunity to re-imagine their post-pandemic offices, but the discourse about what is now planned, whilst in some cases citing the business necessity for face-to-face collaboration, largely ignores the role of unplanned encounter and shows a very superficial understanding of the design principles and working practices that would now need to be applied to the post-pandemic office to afford encounters between weakly tied individuals and thus stimulate innovation once more.

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