

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)

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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.

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." (Gartner 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

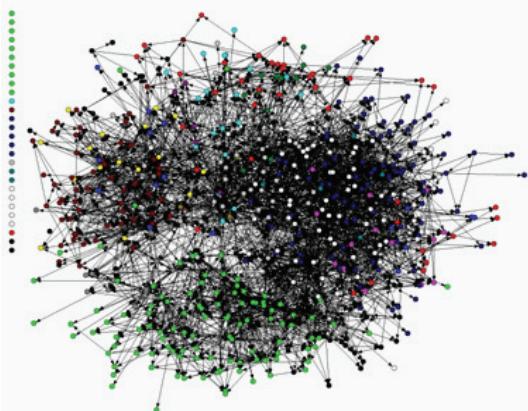
Although knowledge-intensive firms like to see themselves as dynamic and flexible, most workplaces are actually very static. Comparing observations across 24 different buildings show overwhelming evidence of a sedentary work culture. On average, only 6% of people are on the move at any one point in time 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

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Network of face-to-face 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).

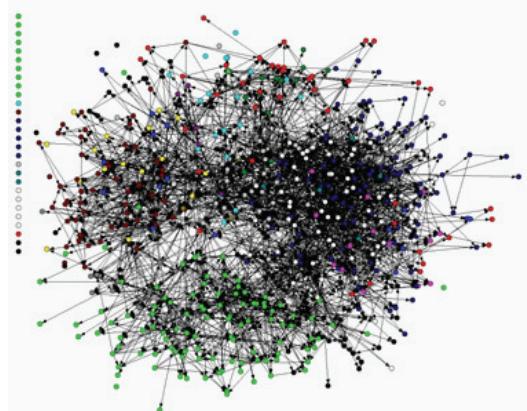
Hence it seems that the openness of the layout impacts how closely email contact follows face-to-face contact: in more openly structured workplaces, staff email those they also meet face-to-face often, while more segregated spaces mean emails reach those recipients that are seen less frequently.

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



Network of email contact in a media company

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

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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**

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