Ambius White Paper

Enrich the office and engage your staff: why lean is mean

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"The simple expedient of empowering individuals and groups to have input into the design and structure of their own surroundings delivers greater levels of organizational identification, citizenship, well-being and productivity ... a lean space over which employees have no control is the least productive use of the working environment." [1]

The improvement of the effectiveness of the work place is something that every organization desires. Often, such improvements are obtained through the improvement of work place design and the adoption of new space management theories. However, the current economic climate means that the resources available to invest in new space or even expensive new office furniture are severely constrained. Fortunately, recent academic research has given us some cost-effective new tools to help make work spaces more humane, effective and productive - at all levels in an organization.

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1   Knight, C.P. (2009). The Psychology of space: determinants of social identity, well-being and productivity. Ph.D thesis, University of Exeter..

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"The UK private and public sector combined will spend over £35bn on the development and the refurbishment of their office spaces in the next year"

Mark Sprag
Steelcase, UK and Benelux
(in the 'Guardian' newspaper, 30 August 2008)

The benefits of improving work place design as a means of improving efficiency and effectiveness have been clearly illustrated in the research carried out over the last few years and there are innumerable case studies showing how companies have claimed to improve staff retention or increase profitability as a result of incorporating the latest office space management theories in their buildings. Unfortunately, many of the solutions offered (where they were offered) relied on organizations completely redesigning their office space, or even commissioning new buildings - there are few published examples of transformations where the constraints of budget, space or time made wholesale physical changes impossible.

Furthermore, case studies tend to highlight spaces occupied by high-status, self directed individuals rather than the vast majority of modern-day office workers: "the over-managed, over-monitored majority".[2] Law offices, advertising agencies and business consultancies are the frequent beneficiaries of the attentions of interior design journalists. Far less frequently do low-status, process-driven "hives"[3] feature in the glossy magazines and picture books.

In these times of stiff competition for top-quality staff (even in the current recession), potential employees are sometimes said to 'interview the building' and consider the physical working environment to be an increasingly important factor when deciding whether to accept a position. Managers risk losing valued staff to competitors that offer a better working environment, and they may fail to attract top-quality candidates to fill vacancies in their organization.

Recruitment and staff retention may not be a top priority in the current economic climate. However, those office workers in situations where the working environment is being eroded in the name of cost cutting (or, as has been reported in a few instances, to

2   Paul Morrell (2004), Chairman of the British Council for offices, in "Fit for purpose or fit to bust", paper presented in Workplace Trends: the emerging office landscape.
3   "Hives" is a term coined by Francis Duffy in his 1998 paper: New environments for working. This is explained in more detail on page 9

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give the appearance of austerity - to avoid accusations of profligacy) might think twice about staying with that company once the economy improves and alternative employers offer better conditions.

This white paper will seek to challenge the theories and practice of modern space management. By reviewing the history of modern office design and examining concepts such as lean space management and Taylorism, we will seek to find answers to three questions.

1. How has office space changed over time?

2. Why do low-status offices appear to result in discomfort and discontent?

3. What are the consequences of different approaches to office space management?

We will offer some cost-effective solutions to some of the problems facing organizations struggling to make old, or poorly-designed offices more effective. We will suggest how buildings may be made just a little more enjoyable and attractive to staff and how companies can reap the rewards of greater productivity and improved staff engagement.

Facts that are too important to ignore

"45% of employees would change their job for a better working environment, even if their role, salary and other benefits were no better."

Office Futures? 2004

In 2004, the **British Council for Offices** produced a report called 'Office Futures?'. In it, the authors quote from a survey carried for Stanhope (a large commercial property developer) which suggested that as many as 45% of employees would change their job for one with a better working environment, even if their role, salary and benefits remained the same.

In 2002, the union **UNISON** surveyed its members within Scottish Call Centres. It found that while at work 75% of them felt stressed, 82% suffered headaches, 78% had respiratory problems,

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Employees of British companies in the business services, financial services and retail sectors regard wellbeing at work as the most important factor in creating a great place to work.

Best Companies Ltd:
(data from the Sunday Times
"Best companies to work for" survey, 2008).

"25% of American office workers found their work places to be gloomy or depressing."

Ambius / Echo Research, 2008

61% complained of pains in their hands, arms or back, while 32% mentioned other work-related health problems.

Management Today conducted a survey in 2003 and found that 94% of respondents regarded their place of work as a symbol of whether or not they were valued by their employer, but only 39% thought that their office had been designed with people in mind.

In the UK in 2008, an analysis of the **Sunday Times** newspaper's "Best companies to work for" survey data showed that employees in the financial services, business services and retail sectors considered wellbeing was the top factor in creating a great work place.

A survey conducted by **Gensler**, a global architect and design practice, suggests that as many as half of the office-based work force would work for an hour a day extra if they had a better work place.

Echo Research, in a study conducted in 2008 for **Ambius**, showed that if employers made more of an effort to improve work place surroundings, 62% of U.S. workers said they would be more motivated. In addition, workers felt they would be up to 30% more productive in a more attractive work environment.

Further findings from the same study showed that as many as 25% of American office workers found their work places to be gloomy or depressing. Cramped and noisy work environments with no natural light, greenery or ventilation are the ingredients of many gloomy or depressing work environments. The cost of not providing workers with windows they can open, plants, flowers and brightly coloured walls could be very high indeed.

In his Ph.D thesis, **Craig Knight** produced experimental evidence that clearly shows enriched work environments can result in productivity improvements of over 15%. Furthermore, if such an environment were enriched by the office workers themselves, productivity improvements of approximately 30% were achieved.

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A whistle-stop tour of the evolution of office work

Until the latter half of the 19th century, office workers had a status above even the most skilled artisan. Egyptian scribes at the times of the pharaohs were described as being of the princely profession, and for the Romans, highly educated people who would plan, legislate, and administer entire projects on behalf of the Empire would work in a mobile set of structures called an *officium*, whence *office*.

Such patterns were replicated in medieval England. Kings had literate clergy (a word that shares the same root as cleric and clerk) who handled the realm's administration, collected taxes from horseback and kept records in their mobile bureaux (root of bureaucracy).

The 18th and 19th centuries saw the development of offices in banks, shipping companies and law firms (previously, much of this type of business was conducted in coffee houses and pubs). Here, clerks were well-paid, high-status professionals. Individual clerks were responsible for managing client accounts from cradle to grave and were as important as safes, given the valuable information they retained.

The industrial revolution saw office spaces grow. The invention of the telegraph and telephone meant that factories and offices no-longer needed to be on the same site. Offices could cluster together in specially-built large, light well-equipped buildings, which were often developed in business districts, leading to the development of impressive corporate buildings. Technology, such as typewriters, mechanical calculators and audio machines also began to speed up office work. Could industry provide ideas that might ensure even greater work place efficiency?

Office design: history, trends and theory

There have been many influential publications, written by highly respected experts in the field of office design, that seek to characterise and define the modern work place, both in terms of physical layout and the type of work done.

However, much of this work is based on theories of space management that can be traced back over a century and have their roots in manufacturing (and even the penal system!).

At the start of the 20th century, office design began to be influenced by the industrial studies of F. W. Taylor and others. Taylor studied the principles of steel production and found that productivity could be greatly increased by splitting skilled and complex jobs into several simplified, repetitive tasks. When applied to the office environment, Taylorist methods saw high-status, complex clerical jobs broken down into simpler individual tasks that could be carried out by lower-status workers, earning less. This meant, for example, that instead of a clerk being responsible for an entire corporate account, the elements of that account (order-taking, typing, filing, customer care, etc.) could become jobs in their own right to be handled by several different lower-paid and less-skilled operatives.

Splitting up a job into simpler components meant that more operators were required to process the tasks, and that more space was required for the job's completion than had been the case before its simplification. However, by centralizing office functions in large buildings, great economies of scale could be realized. In order to allow management supervision, it became common to place the workers in one large open area, often called a 'bull-pen'. On the other hand, managers and specialist workers demanded quieter, cellular space: both to emphasize their own status, and to allow them to think without distraction.

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Such differences in work space status appear to have become entrenched over the course of the 20th century, and it would seem that office work has diverged in such a way that jobs, such as basic office work, have become increasingly simplified and less autonomous, whereas managerial positions have become more complex and dependent on skill. This has its physical manifestation in the way that office spaces are designed.

As a result of being in high-turnover, low-skill, poorly regarded jobs, low-status office workers tend to be treated as an homogenous whole. In consequence, work spaces have come to be designed for a generic employee, rather than accommodating individual requirements. Thus comfort and well-being have become subservient to the organization's overriding goal of profit maximization. Whilst managers often have the privilege of working in aesthetically pleasing, empowered space, the majority of their staff operate in highly controlled, low-design environments.

There are many contemporary case studies featuring innovative and engaging office design, but a consistent theme in this literature centres on the comfort and well-being of high-status workers. A good example is a report by the architectural practice Gensler (2005)[4], which linked business profitability to space aesthetics entirely on the surveyed opinions of 200 *managers* from law, media, publishing and financial firms. Subsequent references (by Gensler and others) to the survey, which appeared to ignore the majority of office workers and the spaces in which they operate, have since extrapolated the results across the entire office sector.

Surely, things have changed and organizations have become more enlightened and left Taylorism far behind? Whilst it is certainly true that many offices look impressive in terms of their overall architecture and interior design, the reality for many workers in those buildings is the daily repetition of a series of simple tasks, sitting at a small desk in an open-plan office, often wearing a headset and in

4   Gensler Architecture (2005). These four walls: The real British office, London: Gensler.

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The early bullpen offices were noticeable for the first appearance of Taylorised space: Regimented desks facilitated visual supervision and the hierarchical use and control of work space. On the periphery of the building and around the central area of the 'pool' were the managers' and supervisors' offices. Only managers retained the prerogative of controlling a window for ventilation and light and a door for privacy, while the pool workers were reliant on increasingly mechanical delivery of the ambient environment

Crompton, R. & Jones, G. (1984). White collar proletariat: Deskilling and gender in clerical work. p.185.

It is the case that some office workers operate in space where considerable thought and effort has been put into creating an enriched, interactive environment. Examples include Google's offices, which are so quirky that they attract considerable media attention, (see the offices on YouTube.com: http://www. youtube.com/watch?v=TPz1Mou-Xxk), and the offices of The Star Tribune (Minneapolis), which incorporates a 50,000 square foot concourse, developed as a 'city' with boulevards, streets, coffee shops and newsstands designed to help workers orientate to their surroundings (sometimes, such campus buildings incorporate such features as a substitute for a real city environment, with all its amenities, simply because such developments are situated well away from city centres).

front of a keyboard. Apart from keyboards replacing typewriters, nothing much has changed in over 100 years! The words on the left describe an office of the first decade of the 20th century - think of the offices where you work and ask yourself if anything significant has changed. It is therefore hard to escape the conclusion that, beyond meeting the legal ergonomic requirements at the work station, Taylorist management of office space is alive and well. So, experience and observations over the last century have shown that there is an increasing divergence between "the privileged, self-directed few" and "the over-managed, over-monitored majority".[5]

So what?

Much contemporary management theory and practice supports the idea that workers performing low-status, low autonomy tasks perform more productively if they are closely monitored and work in conditions often described as "lean". This is where managers focus on the needs of the customer as the organization's key priority by cutting waste, minimizing distraction in the work place, standardizing working methods and maintaining strict control of all aspects of the working environment.

Typically, lean offices are uniform, clean and depersonalized. Office furniture has been designed to support this style of work and the desks and other furniture in these environments usually have a uniform, modular design. They can be easily deconstructed and re-built, allowing managers the ability to reconfigure the layout in any way, and as often, as they see fit. Consequently, office workers have little control over their environment.

The principle of cleanliness is intrinsic to lean space management. One way in which this is demonstrated is though a clean desk policy, where nothing but items essential to the job at hand are permitted on the desk. Comforting items such as food and hot

5   Paul Morrell (2004), Chairman of the British Council for offices, in "Fit for purpose or fit to bust", paper presented in Workplace Trends: the emerging office landscape.

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As management at Her Majesty's Revenue and Customs argued, lean, clean offices are "a key element in (HMRC's) plan to provide improved service and meet efficiency targets"

(BBC News web site, 2006: Customs staff in desk clutter ban)

During the 1950s the Quickborner Team in Hamburg, Germany devised the Bürolandschaft, literally the office landscape. This open-plan system was intended to provide a more collaborative and humane work environment than traditional office layouts. Unfortunately, this soon became debased as organizations failed to understand that the system was as much to with making the work place nicer (with benefits that are easy to grasp, but hard to quantify) as it was a means to making more efficient use of space.

Later, in 1998, Francis Duffy (of DEGW) and the UK's Building Research Establishment published a very important report that hypothesised that offices would become less homogenous and much more responsive to the particular needs of individual workers or teams. Offices would evolve from places where processes are carried out to where thinking is done and creativity allowed to flourish. Four organizational types could be identified, all of which have separate styles of work and space needs (these have been named as Hive, Den, Club and Cell) and all of which can be accommodated in one organization, or even one office. However, nothing in the report incorporates ideas of employee decision making - design decisions remain the privilege of management.

drinks are not permitted, nor are personal effects, such as children's drawings, photographs or mementos and seldom are offices decorated with seemingly space-wasting ephemera as plants and art (unless "motivational" posters or corporate messages). In this way there is, according to theory, nothing to distract workers from their tasks, thus minimizing diversions and maximizing productivity.

An alternative approach

Is lean space management really the best way to organize work spaces? Psychologists might argue that a lean, unenriched space might cause problems for people as they do with animals. If zoo animals, or even laboratory rats, are placed in situations devoid of stimuli, they start to exhibit strange behaviours and show signs of stress. So much so that animal cruelty legislation is in place to prevent such abuses. So why do we allow our own species to be subjected to similar privations? We might argue that the very nature of our humanity overrides the need for environmental enrichment for eight hours a day whilst at work, but there is a growing body of evidence to suggest that discomfort in the work place and reported symptoms of sick building syndrome are more to do with psychological discomfort than they are to the shortcomings of the physical environment, such as lighting, temperature and humidity.

As part of his Ph.D research, Craig Knight conducted a survey among office workers and carried out a number of experiments to discover how design and space management affected comfort, well-being and productivity. Two on-line questionnaires were compiled. The first was completed by nearly 300 British and American office workers from four companies. The participants were all volunteers and represented a very broad demographic spread: males and females, aged 18 to 70 and in a wide variety of white collar occupations from junior to very senior positions. A second questionnaire was completed by over 1,000 office workers who took part after following a link from

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Example of an enriched office in London. Here, office workers selected plants and art and decided on the layout.

the BBC News web site that was connected to a news item about the management of office space.

Both questionnaires related to the physical aspects of the participants' work space, examined workers' sense of identification with their employers and colleagues, and explored their sense of job satisfaction. Once the data had been collected and analysed, a series of statistical relationships were tested, which resulted in the development of a model. This showed, that to the extent employees' felt that they had control over, and autonomy in, their work space (and, in the second questionnaire, were working in a pleasant physical environment) they tended to report a greater sense of psychological comfort. This, in turn was associated with higher levels of organizational identification, and also mediated a relationship between perceptions of the physical environment and organizational identification. Higher levels of organizational identification were in turn associated with feelings of greater physical comfort and enhanced job satisfaction. Moreover, organizational identification mediated the relationship between comfort and both well-being and satisfaction. It should be noted that the statistical data showed very high levels of significance.

This is a fairly complicated way of saying that there appears to be a positive relationship between having some say over the way the work place is designed and feeling good about the work that is being done and the organization for whom the work is being performed.

UK office worker studies
(Exeter University
PhD thesis)
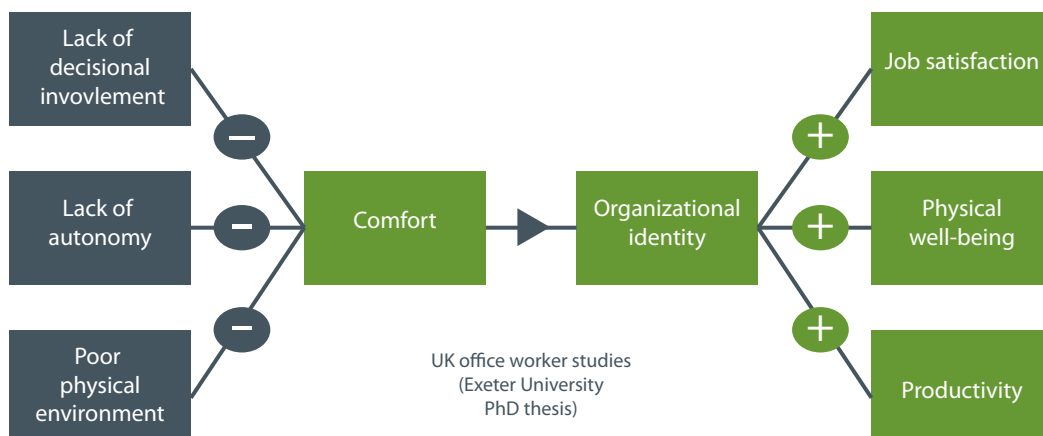
Evidence of this association is important for several reasons.

Most notably these studies speak *against* managerial models which argue that

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the optimal way to manage organizational space is to leave relevant decisions in the hand of managers, thereby removing autonomy and control from office workers. Indeed, these findings suggest that such strategies can be counter-productive insofar as they tend to be associated with reduced comfort, identification, well-being and satisfaction of employees.

Again, one might ask "so what?" - where is the evidence that these factors impact on business outcomes? Maybe it is acceptable to subject employees to a degree of psychological discomfort in the name of productivity.

The studies' findings are also at odds with recent design literature by positing that attention to issues of design (e.g., ergonomics, fit-out and aesthetics) will be insufficient, on their own, to create a positive working environment: the relationship between management and workers within the work space is just as important.

Testing the model

Questionnaires are very useful for establishing links, but not for demonstrating cause. For example, the data show an association between autonomy and comfort, but does greater autonomy make you feel more comfortable, or does your comfort affect the way you feel about how much autonomy you have? Do you believe that you are more productive if you identify with your employer, or does your sense of identity and engagement stem from your own satisfaction at being successful and productive? The only way to find out is to conduct some experiments.

Craig Knight's next step was a series of experiments designed to test a set of hypotheses developed from the questionnaire data. The key issues that were investigated concern whether or not empowerment within office space impacts upon (a) well-being (in particular, feelings of psychological comfort, organizational identification, physical comfort and job satisfaction) and (b)

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Hypotheses tested:

H1: *enriching office space* with pictures and plants is likely to increase workers' (a) sense of psychological comfort, (b) organizational identification, (c) job satisfaction, (d) physical comfort and (e) productivity.

H2: *empowering workers* to manage and have input into the design of their own work space - allowing them to project their own identity onto it - will enhance feelings of (a) psychological comfort, (b) organizational identification, (c) job satisfaction and (d) physical comfort and also (e) enhance productivity relative to both lean and enriched conditions.

H3: *disempowering workers* by overriding their input into work space design will reduce their feelings of (a) psychological comfort, (b) organizational identification, (c) job satisfaction and (d) physical comfort. It was predicted that this would impact upon (i.e. reduce) productivity relative to an enriched or an empowered office environment.

productivity. Starting with the premise that lean space management offered the best outcomes for business (after all, that is what respected management theory contends, despite an almost complete absence of empirical data to support it), a series of office-based tasks were completed by volunteers in a variety of conditions.

Based on a psychological understanding of space management, three hypotheses were tested (see left). These were founded on research and observations relating to the enrichment of the work space by investing in 'environmental comfort', which confers a number of benefits (e.g. via art[6] or interior plants[7]). The social identity approach to organizational life suggests that managers who involve employees in decision-making are also likely to build a sense of shared organizational identity that enhances workers' motivation and, ultimately, their productivity. However, management literature generally advises that managers should assert (or reassert) control of the work space. So would re-introducing managerial control into areas where workers have become used to more autonomous conditions compromise organizational identification and thereby undermine the benefits of productivity and well-being?
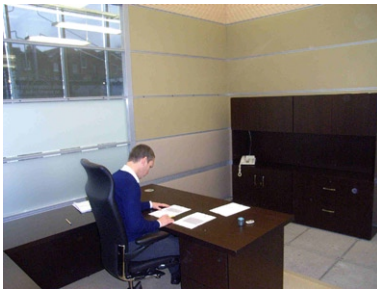
The experiments

A preliminary series of experiments was conducted at the University of Exeter. These were designed to test the methodology and the robustness of the statistical analysis and give an indication as to whether any differences between the various experimental conditions could be discerned. Once these were completed, a second series of experiments were conducted at commercial offices in London, involving a cross-section of office workers from a variety of backgrounds and companies.

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6   Kweon, Ulrich, Walker & Tassinary, (2008). Anger and stress - the role of landscape posters in an office setting. In Environment and Behaviour, 40, 355-381.
7   See Ambius White Paper No. 1: Plants in Green Buildings. (which can be downloaded at http://www.ambius.co.uk/learn/white-papers.aspx)

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Experimental condition: Lean space (Control)
The office space consisted of nothing other than office furniture (albeit of a very good quality)

Experimental condition: Enriched (H1)
The office space was decorated by a designer with a selection of plants and corporate art.

Experimental condition: Empowered (H2)
The office space was decorated by the participant. The participant was allowed to choose up to 6 plants and up to 6 pictures from a selection provided by the designers

Experimental condition: disempowered (H3)
The participant was allowed to decorate the space, as in condition 3 (above), but the design was then compromised (rearranged) by 'management' - in this case, the experimenter.
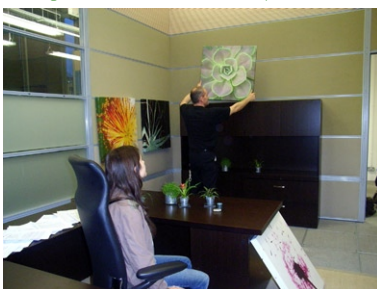
The experiment consisted of a series of office-based tasks and a questionnaire. Participants were randomly assigned to one of four conditions (see left), designed to test the hypotheses shown above and then given a set of typical office tasks including reading, understanding and acting upon the information contained is a set of memoranda, proof reading, data sorting and task allocation. After the exercises, the participants were asked to complete a questionnaire.

The tasks set were designed to test speed, comprehension and accuracy in the processing and management of information. Organizational citizenship behaviour was also tested (in other words, how altruistic people are towards colleagues and their employer).

Results

In both experiments, well-being and productivity were enhanced by enriching a space (H1) and then by empowering participants (H2) within the same working environment. Disempowering participants (H3) had the effect of significantly compromising both well-being and productivity. The office experiment also suggested that enrichment and empowerment lead to increased organizational citizenship behaviour.

The headline results are hugely impressive (and statistically very significant). The full results are published in the thesis and will also be presented in respected academic journals.

- Lean space was used as the benchmark. Here, the average time taken to complete the tasks over 40 minutes, whereas in the empowered condition, it was under 28 minutes.

- The total number of errors ranged from an average of 24 in both the lean and disempowered conditions to an average of 17 errors in the empowered condition.

- For both speed and accuracy, the enriched condition fell between the lean and the empowered conditions.

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Craig Knight's thesis suggests very strongly that the evidence presented here accords with the view that lean conditions may indeed be psychologically impoverished and that insufficient peripheral stimulation may be a factor in lower performance. Enriching the environment made a quantitative and qualitative difference to participants' perceptions and performances. Having an input into the design of their work space increased participants' feelings of autonomy and decisional involvement, and this led to increases in comfort, job satisfaction and productivity. However, these effects were attenuated when participants were disempowered.

These data appear to contradict a large body of management literature which promotes lean space, clean-desk policies and standardized managerial control of working environments as keys to improved productivity. The data from Craig Knight's studies indicate that *a lean space over which employees have no control is the least productive use of the working environment.* Instead, his findings suggest that welfare and productivity are most likely to be optimized by practices that empower the work force. Indeed, in the experiments here, empowerment (even though it only extended so far as the choice and placement of interior plants and artwork) was the key differentiating factor in increasing productivity by up to 32%.

Applying the benefits of this research

This paper gives a significantly simplified and shortened account of the research carried out by Craig Knight as part of his Ph.D thesis (which at almost 250 pages is a substantial piece of work), and does not include the full details of the methods used to collect, analyse and interpret the data. It would, therefore, be wrong to surmise that all that is needed to increase productivity in your office by 30% or more would be to ask the staff whether they want plants and art in the office. The benefits of empowered enrichment are predicated on carrying out genuine and meaningful consultations between managers, designers and staff

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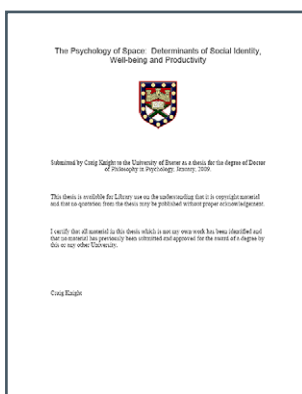
where the process stops at its natural conclusion, not at the point where management reach the limits of their comfort zone.

Nevertheless, there is sufficient and compelling evidence (from this study, as well as several others), to demonstrate that the simple expedient of enriching a work place with plants and art will produce benefits that far outweigh their costs: staff engagement and retention are likely to improve; complaints about the indoor environment and air quality are likely to reduce.

Further research: Prism

The research presented here is still at an early stage. The data collected, though statistically robust, were obtained from experiments conducted over a relatively short period. A new research programme is already under way where the theories developed by this research will be tested under real-life working conditions, in the offices of large, blue-chip companies over a period of more than a year.

Additionally, a research and consultancy practice, called Prism (Psychological Research into Identity and Space Management), has been established as a joint venture between Ambius and the University of Exeter under Craig Knight's leadership. This consultancy offers organizations the opportunity to participate in top-quality academic research, whilst at the same time benefiting from the expertise already gained.

Prism is keen to forge links with any organization seeking to enhance its office environment and the experience of the people working within it. Prism's goal is to make the provision of a psychologically rewarding environment an economic necessity, not just a moral option.

Interested organizations are invited to be part of this exciting research project where the potential to make a positive difference is very real. Prism's contact details are shown on the left.

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Craig Knight is the Principal Researcher and Managing Director of Prism (Psychological Research into Identity and Space Management), a research-based consultancy based at the University of Exeter in the southwest of England. With over 20 years commercial experience in the field of office design and commercial furniture, Craig has now applied his knowledge to academic research. Under the supervision of world-renowned psychologist, Professor Alex Haslam, Craig's recently-published Ph.D thesis (The Psychology of Office Space: Determinants of Social Identity, Well-being and Productivity) has already been acclaimed. Ongoing research within Prism is aimed at refining the Prism model and offering a research-backed consultancy service to companies around the world. More details about the work of Prism can be found on their web site: **www.prism-identity.com** .

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We are the world's largest interior landscaping company, with businesses in 18 countries in Europe, North America, South Africa and the Asia-Pacific region. Depending on where you live, Ambius offers additional services such as exterior landscaping, seasonal and holiday decorating, corporate art, ambient scenting and fresh fruit and flower deliveries.

Ambius is backed by unmatched technical resources, collaborative research with leading universities and the combined expertise of some of the world's most knowledgeable and experienced people, as well as the resources of the world's leading business services company - Rentokil Initial.

Ambius is ethically and environmentally aware. We are members of the UK Green Building Council, the US Green Building Council and the Australian Green Building Council. We are committed to improving the environment with our services and are actively working at reducing our own environmental footprint.

Full details of our services, values and vision can be found on our web site: **www.ambius.com**.