INTRODUCTION

RESEARCH PERSPECTIVES

The changing nature of work

By Paul Wheeler
The argument that organisations face a rapidly changing business environment is shared by most contributors to the research perspective series. This paper will also seek to explain why the changing context in which we work demands that we rethink the way that we use space. By way of an introduction we will review some of the fundamental forces driving change. These forces act on a wider range of issues than are traditionally considered within discussions on corporate real estate strategy and workplace management. However, one of the central arguments pursued below is that thinking about property and the workplace cannot be divorced from the wider context of change.

The starting point for this analysis will be the role of technology in driving change. The power of technological change to transform society has been recognised by commentators since the industrial revolution. Change in the way things were produced was accompanied by change in organisational structure and wider social change. The transition from cottage industry to cotton mill was predicated on the economies of scale required to make effective use of steam power. This concentration of resources in a single industrial building was mirrored in the latter part of the 19th century by the emergence of large office buildings. Demand for these buildings appeared with the emergence of the large corporation, itself a direct consequence of the industrial revolution. While different dynamics were in play, the underlying driver of increasing efficiency through greater centralisation and concentration of resources was the same in both cases.

The technological revolution occurring today creates the possibility of reversing this centralising process and distributing work. This is not a deterministic thesis. Technological innovation creates possibilities of different futures, social factors tend to determine which future is realised. While the consequences of the current revolution may be far more limited than those of the industrial revolution, it is already apparent, even working with today’s immature technologies, that the implications for the way we work are potentially radical.

Technology acts to transform the workplace in two distinct ways: it at once changes the way we work and the work we do. The changes in the way we work, including where, can best be described as the digital revolution. The change in the work we do is best observed through the emergence of the knowledge economy.

The diagram above schematically illustrates the transformation in costs of production for a ‘knowledge product’. This shift raises various problems for companies. Falling costs of production are fine for first movers able to reap huge competitive advantages from their position. However, these advantages are short lived as other competitors rapidly move to level the playing field.
In parallel, and interrelated to, the growth of the knowledge economy is increasing globalisation. Products and services capable of digital distribution are in the forefront of this process. Digital products by their nature can be readily exchanged around the world. Companies working in these sectors are therefore highly exposed to competition. These two factors in combination are already exerting a downward pressure on margins in some sectors; as the weight of the knowledge economy in the overall economy increases this pressure will also increase.

In response companies are seeking further improvements in productivity. However here another problem emerges: the paradox of productivity. The diagram above illustrates falling cost, or equally increasing productivity. The two economic transformations illustrated above, the industrial and digital revolutions, have reduced the costs of production and distribution to marginal elements in the overall cost of many products. The diagram shows no cost/ productivity improvement in the intellectual component.

The evidence for productivity improvements from the introduction of ICT has been mixed. Figures published by the US Department of Commerce suggest that businesses making the highest investments in ICT have actually seen overall productivity dip\(^1\). Whatever the truth of these claims, we can be certain any further dramatic improvements in productivity have to come from the intellectual component. However experience suggests that increasing the intellectual or knowledge output of an organisation is the most difficult area to improve.

Over the last decade, under competitive pressure from the forces described above leading global organisations have invested heavily in ICT, business process reengineering and knowledge management. Where these investments have been thoughtfully and intelligently directed organisations have reaped considerable benefits. However few organisations have applied the same degree of rigorous analysis and the same level of investment to their workplaces. The focus on potential enablers to knowledge working is therefore encouraging businesses to scrutinise the functioning of their workplaces more closely than ever before.

**ISSUE 1: DOES THE EMERGENCE OF THE KNOWLEDGE ECONOMY PRESAGE A FUNDAMENTAL SHIFT IN THE NATURE OF WORK?**

The defining characteristic of the knowledge economy is the recognition that intellectual assets are the key to competitive advantage for business for the future. This represents a major shift in thinking. While debate continues about what percentage of the workforce are knowledge workers, from a corporate perspective knowledge workers are held to account for 97% of corporate profits.

If we accept a distinction between knowledge and ‘process’ for want of a better term, and that the majority of office workplaces have changed little in design over the last 50 years there is a prima facie case for examining how workplaces can be better designed and managed to support knowledge work.

Thoughtfully improving the physical working environment from a perspective that integrates an understanding of the role of ICT and of human resource management provide corporations with an opportunity to substantially increase the productivity of their most valuable workers.

Workplace professionals need to understand what are the drivers shaping the design of the workplace in the context of the changing nature of work? What are the implications of flatter organisational structures, shorter lines of decision making and rapid organisational change for the workplace?

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\(^1\) Department of Commerce, ‘The Emerging Digital Economy’ (US Department of Commerce: 2000)
Changes in the nature of work demand fresh methods of analysis. As workplace professionals we may accept that knowledge workers have different demands from their working space however few tools are available to analysis the nature of these demands. Most methodologies focus on process rather than outputs. Meeting the needs of the knowledge economy calls for semantic rather than syntactic analysis of work activities and tasks. Developing this semantic understanding of outputs should help both in the design and management of the workplace and also in measuring its performance.

This seems an instantiation of a general management problem moving from management by observing presence to management by measuring outcomes – part of the general shift of value being created from knowledge. Examination of recent research in management theory may shed light on this problem.

Tools have been developed for assessing how space is used across time producing information on occupancy levels. Fewer tools are available that allow us to monitor how individuals are using different spaces across time. Only through gathering data of this sort can realistic assessments of the way that the workplace supports business performance made.

Do existing measures of occupancy, density and building use still provide useful information for understanding how buildings are used to support business performance?

**ISSUE 2: TO WHAT EXTENT AND HOW WILL TECHNOLOGY CHANGE DEMAND FOR PHYSICAL SPACE?**

New developments in ICT offer huge possibilities for how and where we work. However little systematic research has been done to inform decision makers on the likely impact of these developments on the demand for space.

These technologies are likely to have implications for where people work, the types of space and the arrangements of workspace that they work in. More controversially, emerging technologies may have implications for the overall demand for space: some user organisations are already reporting falling demand for space despite rising head count and general business growth, although other organisations still see demand for space continuing to grow in line with headcount.

Given improved communications technologies, different drivers will emerge to determine work locations:

- Satellite offices, giving staff shorter commuting times and/or speedier access to clients will increasingly be used. Trend is already well established in some organisations and leading to direct reductions in requirements for space in central business areas.
- Given location independent access to corporate information and resources some organisations may seek to co-locate their staff with clients or customers. Maximising face-to-face interaction with the most sensitive link in the communication process. To make appropriate decisions organisations will need to understand what kinds of activities can be carried out virtually and when face-to-face interaction is vital.

Technologies may change the way that space is used in office workplaces:

- Many work activities may move out of the ‘office’. A range of third spaces may increasingly be used as for work. Informal meetings may increasingly take place in cafes and other social spaces etc. Work will of course still take place at some physical location however this may not be a dedicated single use working environment.
- Work may be performed through entirely different tools with different space implications. Office configurations are significantly influenced by the technology of the day. Requirements for CPUs, screens and keyboards determine the current generation. However, new
technologies could produce dramatically different requirements. Voice activation technology provides a simple example; the shift from keyboard input to voice input for text and data is not only possible but already underway in some organisations. Given the advantages of voice input over keyboard if these technologies approach maturity organisations might be expected to shift wholesale to this new technology. Some research has been done on the acoustic qualities workplaces require to support use of these technologies. However given the fact that contemporary office design is based around the need to place keyboards at appropriate heights with relatively rigid space footprints one would expect to see far more broad ranging studies into the potential implications.

The combined impact of these trends is likely to change overall demand for office space rather than merely move demand from one location to another:

- The much derided paperless office may eventually emerge as a reality – reducing requirements for storage space
- Flat screens and reduced requirements for server rooms through increased use of ASP will and are reducing space requirements
- Increased flexible working has huge potential to reduce demand for office space.

Will the current trend of organisational consolidation, seen most clearly in financial services, continue and lead to increasing demand for larger and larger buildings, or will emerging communications and computing technologies enable organisations to operate dispersed across multiple locations as effectively as from a single building?

Executives today are making decisions on the acquisition and disposal of billions of pounds worth of property based on very little information on future demand. While there has been some movement towards greater flexibility of tenure the impact of these decisions is still relatively long term. Parallel concerns exist for suppliers of space. Decision makers need better information to understand changing demand.

Workplaces will increasingly be viewed as hybrid spaces including physical and virtual elements. Given the sophisticated understanding of workers needs decision makers will need tools to allow them to make rational choices between investment in physical and technological infrastructure

Co-location of workers in a single physical space provides workers with an environment rich with explicit and implicit communication. Emerging ICT tools provide that richness, or elements of it, to distributed workers. This would allow organisations to distribute activities and individuals without the locational constraints that previously obliged organisations to co-locate workers. Working environments will increasingly be hybrid combining elements of virtual and physical. Location does not cease to matter, as some technological visionaries would suppose, but instead it matters in different ways.

Users need to understand what are the activities that are performed most effectively in face-to-face situations and which can be effectively performed in mediated environments. Even less research is available enabling users to understand how mediated environments can be further augmented to support a wider range of activities.

**ISSUE 3: WHAT IS THE RELATIONSHIP BETWEEN ORGANISATIONAL CHANGE AND WORKPLACE CHANGE?**

Organisations facing rapid change in the external environment are responding by changing and transforming themselves. Changing demands for space can be, and are, seen as a consequence of these changes. Design and management of the workplace need to be intimately linked with overall business goals. However, working environments can also play an active role in
organisational transformation, rather than emerging as a by-product of the transformational process they can be used as a powerful tool drive change.

How do organisations maximise the opportunity created by the need for physical change to make changes in organisational culture and structure?

To do this effectively they need tools for understanding their internal culture and processes. These tools should enable them to assess the way that a workplace environment supports the organisational goals and culture, and also do the reverse - map the physical implications of organisational goals and culture.

Maximising the opportunity requires an understanding of organisational adaptability, its capacity for change and the potential directions in which change may take place.

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