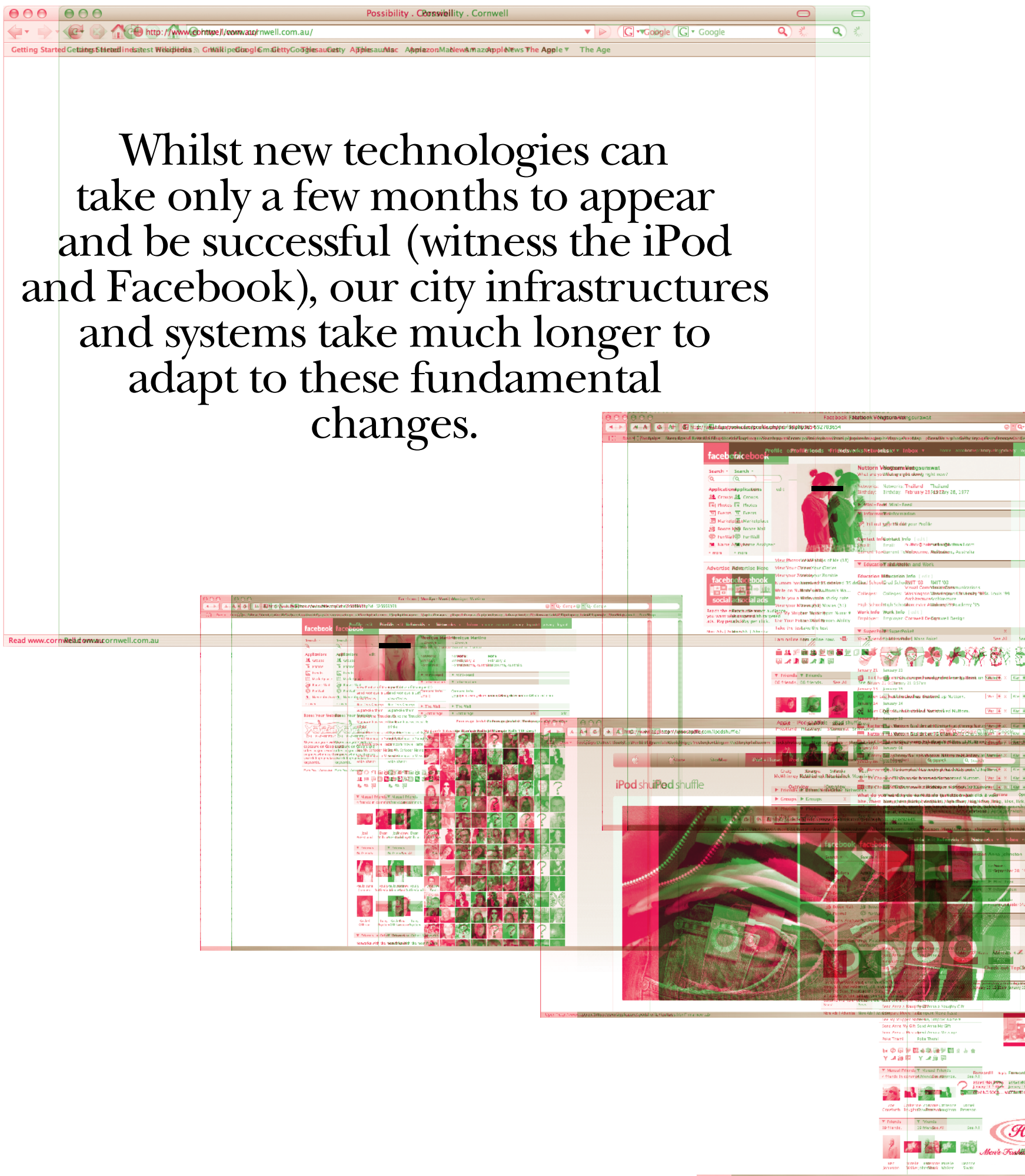


144
HOUR
CITY

by James Calder

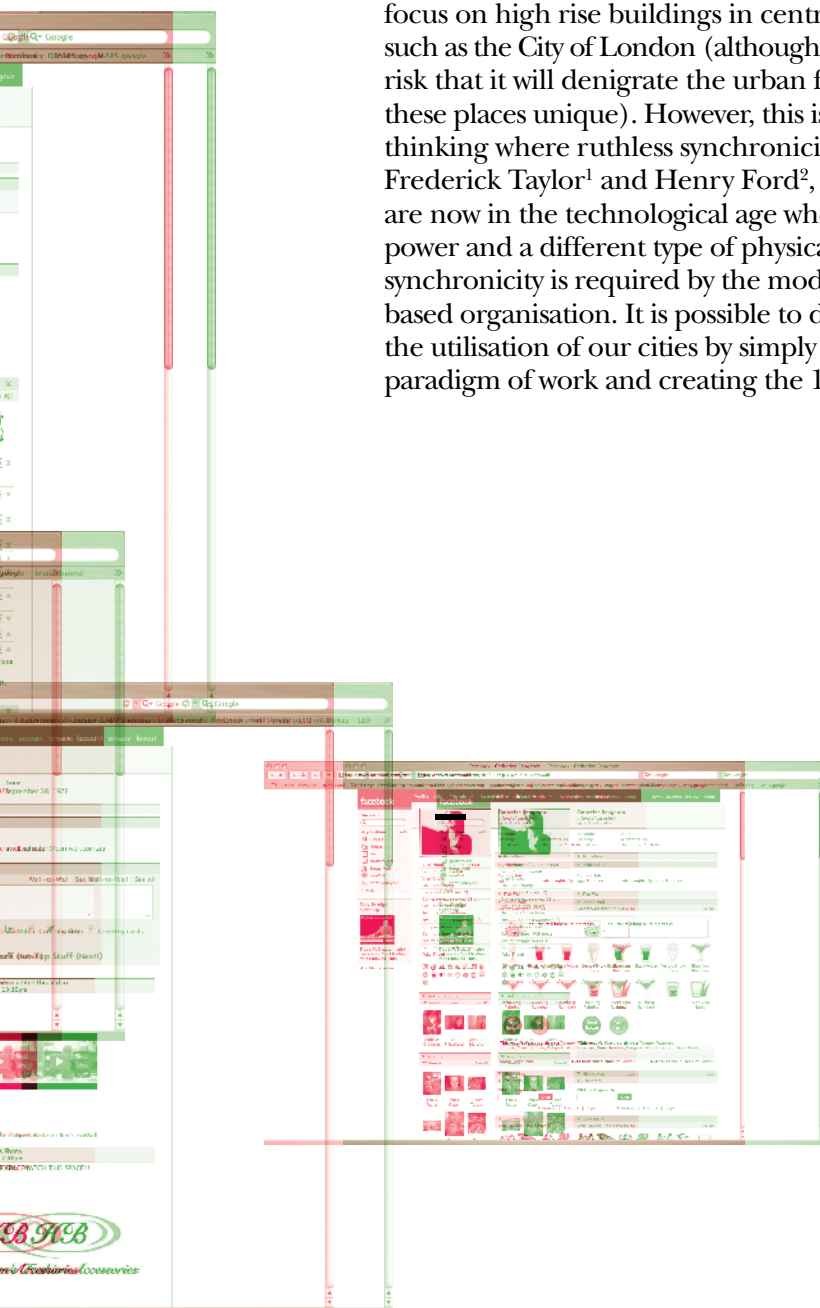
Whilst new technologies can take only a few months to appear and be successful (witness the iPod and Facebook), our city infrastructures and systems take much longer to adapt to these fundamental changes.



The information technology revolution that humankind has been creating since the invention and commercialisation of the telephone, radio, TV, PC and internet is accelerating as new products are developed. Each new generation becomes more adept at living and working with information and communications technologies in new ways. Whilst these technologies can take only a few months to appear and be successful (witness the iPod and Facebook), our city infrastructures and systems take much longer to adapt to these fundamental changes. To use an Industrial Age analogy, James Watt's steam train has just run for the first time in terms of our understanding of the impacts on our cities and society of the information technology revolution.

The crisis that is facing us with climate change due to the unsustainable use of the earth's resources is forcing us to look at new ways of doing more with less. There is no better place to start than our cities, where our archaic legacy systems from the Industrial Age and our own mindsets have created a system of breathless inefficiency and waste. Our planners and governments are starting to realise that adding more infrastructure is too expensive and usually only increases demand rather than improving existing conditions.

There is now greater effort on maximising the efficient use of the existing systems, such as a renewed focus on high rise buildings in central business districts such as the City of London (although there is the potential risk that it will denigrate the urban fabric that make these places unique). However, this is still Industrial Age thinking where ruthless synchronicity, reinforced by Frederick Taylor¹ and Henry Ford², was vital. We are now in the technological age where knowledge is power and a different type of physical and virtual synchronicity is required by the modern knowledge based organisation. It is possible to dramatically increase the utilisation of our cities by simply rethinking the 9–5 paradigm of work and creating the 14 hour working city.



A new model

The re-engineering of our working days, from our current 9–5 model into an early and late shift with an overlap in the middle of the day will have profound benefits for our society, including:

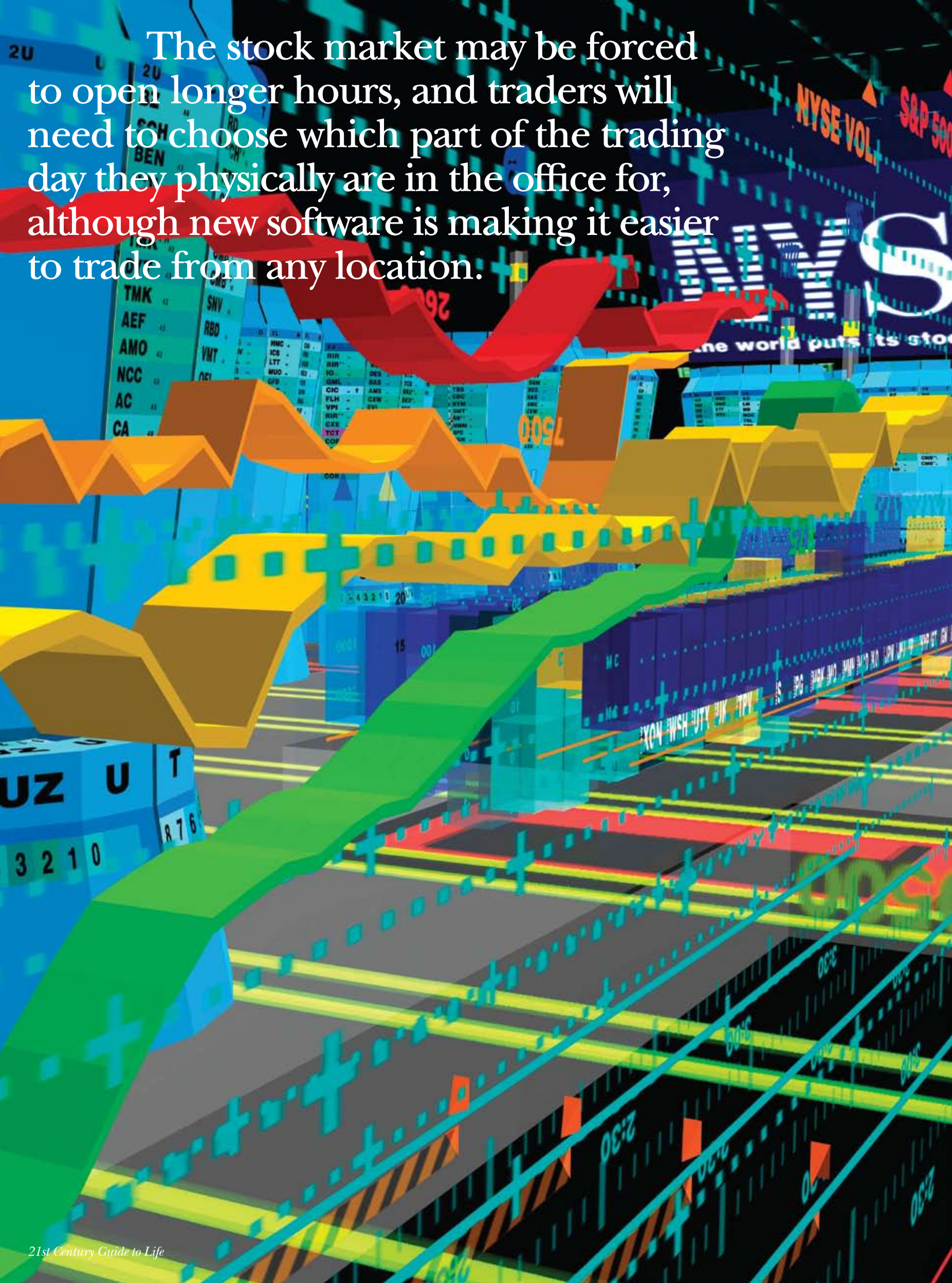
- An increase in the productivity of knowledge workers as they have more ability to control their day into concentrated individual work and collaborative team work
- The productivity of global organisations will also increase as the overlaps of time zones around the world will be far greater creating a more seamless twenty-four hour global business environment
- An increase of around 30–40% in the utilisation of public transport, roads, and office buildings
- An end to the crushing futility of the morning and evening peak hour rush
- A more flexible approach to working hours that will help people to balance their work and life where matching personality type with job demands can increase productivity. “Stated preferences are usually a clear indication of body clocks and, therefore, of efficiency” (Trotsky, 1987, p. 1).

Furthermore, this can be achieved without the negative effects felt by some night time shift workers. Research on circadian rhythms suggests that certain personalities will naturally prefer either the morning or afternoon shift. It seems that these rhythms are genetic rather than learnt (Sarkis, 2000) and that:

- 0.2% of the population are estimated to be ‘larks’: Bed at 9.30 pm, up at 4.30 am.
- 4.5% of the population are ‘owls’: Bed at 3.30 am, up at 11.30 am.
- The rest cluster around the mean (12.30 am – 8.30 am) according to a normal distribution (Merrow, Spoelstra & Roenneberg, 2005).

With this in mind, it is possible to cover the 14 hour work day without prescribing set shifts per se. It is assumed that the frequency distribution of people ranging from larks to owls follows a normal curve. Therefore the natural range of types represented in an organisation's workforce should ensure that the nine hour block (6.00 am – 3.00 pm and 12.00 pm – 9.00 pm, assuming an eight hour day with a one hour break) is resourced via a flexible process of self-selected hours (Figure 1).

The stock market may be forced to open longer hours, and traders will need to choose which part of the trading day they physically are in the office for, although new software is making it easier to trade from any location.



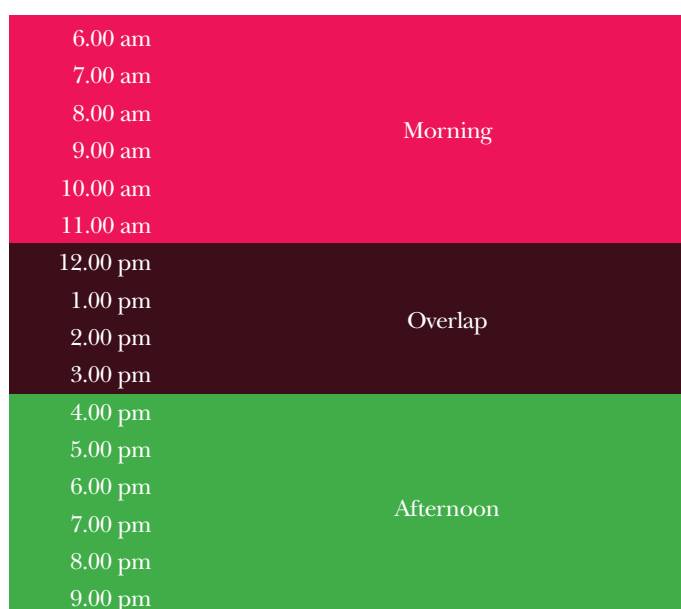
Of course, every great idea comes with a curse. One downside may be greater pressure on some workers (particularly managers and specialists) to be working fourteen hours a day. The stock market may be forced to open longer hours, and traders will need to choose which part of the trading day they physically are in the office for, although new software is making it increasingly easy to trade from any location. Also, a stigmatisation into morning and evening people could develop, although in reality this type of work style choice is already apparent in knowledge industries where creativity is valued and personal choice is more tolerated.

Sustainability

It is estimated that buildings contribute more than 30% of global greenhouse emissions (Energy Information Administration, 2007), and yet they are one of our most under-utilised assets. The typical 9–5 knowledge worker spends approximately a third of their working day at their workstation or office, and around another third in the building (Marmot & Eley, 2000). This works out to a 9% desk utilisation and an 18% total building utilisation across the possible 168 hours in the week (Figure 2).

Increasing the utilisation of the workplace is the quickest and easiest path to the goal of sustainable design of office buildings. Good progress is being made around the world in terms of engineering, measurement and rating systems and this development is essential but does not address the changing nature of knowledge work. Many of the engineering models are still based on out of date thinking about work styles that assume everyone is at their desk from 9–5, that they are process workers rather than knowledge workers, that they still use typewriters rather than mobile devices.

Figure 1. The 14 hour work day



Legacy systems

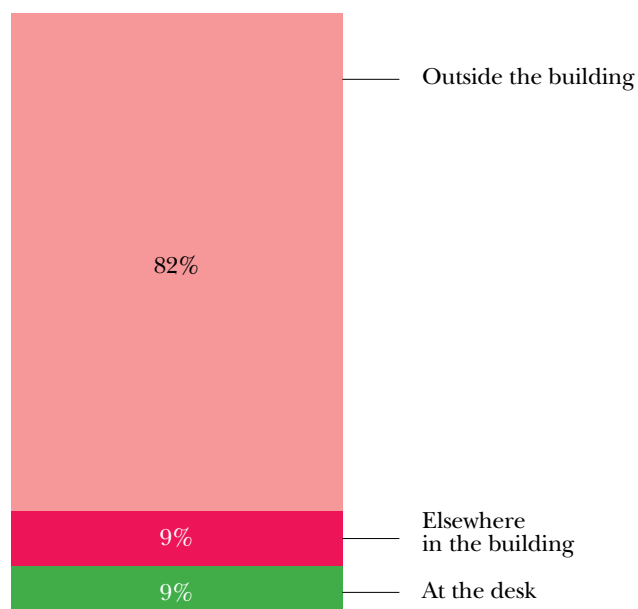
The beginnings of settlement, based on the ability to grow crops and domesticate animals, introduced humans to the cycles of nature—the seasons, the lunar cycles and the twenty-four hour rotation of the earth around our sun. We evolved with these cycles until the Industrial Revolution with the development of the clock, then electricity and the electric light bulb that allowed us to work in the most unnatural of ways—in a factory or clerical office. Synchronicity was an essential ingredient of the Industrial Revolution.

The invention of the PC and the internet has fundamentally altered the nature, location and necessity for the constant synchronicity of work. A combination of individual and team work is now essential in the knowledge economy. Furthermore, the jet plane has created physical connectivity and the internet virtual connectivity that enables us to work most effectively in the twenty-four hour global marketplace.

The IBM PC has only been around since 1984, and its impact is only being felt now. Our cities have not had time to respond to the fundamental changes of the information revolution and are fundamentally Industrial Age cities. Similarly, our planners and urban designers are only beginning to understand the implications of knowledge based economies and cities. Much of their thinking is based on Industrial Age synchronicity with little understanding of the new work and life styles. We are operating in a legacy system of physical infrastructure and urban design rationale.

There is much to learn about knowledge management and the new workstyles of knowledge workers. In most western economies around a quarter of all work is done at home, and the rapidly improving quality of virtual communication and its simultaneous reduction in price (Skype is free) will only increase this figure. At present the growth rate seems to be around 5% per year.

Figure 2. Utilisation of a typical office building



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Proposed tower, Brisbane. Designed by Woods Bagot



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These fundamental changes will have significant physical implications. An example of this is the rapid growth in conferences and the subsequent creation of conference and exhibition centres—this is a direct physical response to the power of the internet to connect people with a particular interest virtually (read more on this topic, 'Unconventional', p. 142). The role of the town hall and town square was critical in the Industrial Age. The Information Age will require quite a different clustering of activities and events for people to interact effectively. Knowledge management theory tells us that we will see an increase in the range of spaces for tacit knowledge exchange, and whilst the best of spaces from the Industrial Age city will remain useful (and extremely pleasant), a richer menu of spaces for the information age will be demanded.

Organisations are just beginning to structure themselves globally (rather than federally by time zone and region) and we are seeing the first of a new breed of organisation that has no physical presence. These changes are observable in the growing awareness of work-life balance as the demands on many workers to work extended hours increases due to globalisation.

As an aside, this has health implications in terms of circadian rhythms: "As our society moves towards a worldwide 24/7 culture, with shift work and jet lag almost the norm, circadian clock research is becoming highly relevant to human health, behaviour and quality of life" (Merrow, Spoelstra & Roenneberg, 2005, p. 934). Interfering with circadian rhythms can have a significantly negative impact on business: human fatigue is estimated to cost global business more than \$370 billion annually (Moore-Ede cited in Daugherty, 1993). Rigidly sticking to the idea of synchronicity can also impact an organisation's ability to hire staff—probably the biggest issue facing many organisations at present. Flexible working arrangements are considered the best way to attract and retain staff (Conlin, 1999). In a British study, one in three people (from a sample of 5000) said they would prefer the option to work flexible hours over a £1000 pay rise (*Flexibility valued by British workers*, 2003).

Conclusion

The design profession, and in particular city planners, needs to quickly come to terms with the fundamental changes in our work styles and lifestyles due to the Information Age. The time bomb of global warming has created a burning platform that demands urgent focus. The stakes are high. We can dramatically improve the utilisation and effectiveness of our cities by a simple rethink about synchronicity and work-life balance. The organisations and cities that are first to grasp these fundamental opportunities created by information technology will also be the first to prosper and create competitive advantages that will last for generations and they will dramatically help in our drive to be more sustainable.