

Public #3

Work Life

Edited by James Calder



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Let there be light: Design implications of daylight penetration

Earle Arney and Jula Spilker
Haico Schepers and Alex Rosenthal

Let there be light! Such a grand creational instruction could be tweaked in terms of workplace design to read: “Let there be light, but not too much and not too little.”

As someone who is a global nomad crossing multiple time zones every month, it never ceases to amaze me how important light is. Light is the foundation of our existence as we gain an understanding of our environment through the visual sensation of illumination. When arriving into a city for the first time under the cover of night it is a wonderful unfolding experience to observe the sun rise and illuminate the surroundings. This awakening of the day brings with it a change in the perception of place and is based not only on the quantity of light but also on the degree of contrast. The intense contrast of the summer skies searing the sands of Dubai, for instance, create a very different sense of place to the overcast horizon normally enveloping Singapore. Both experiences, despite their relative qualities of the picturesque, create a different perception as it is the brightness contrast of a space that influences its emotional impact.

Once the sun has risen, every long haul traveller knows that it is imperative to be outside as long as possible during the first day after a night flight. This is because daylight is one of the principal environmental synchronisers that the human body uses to maintain equilibrium. The daily pattern of daylight and darkness augments the body's circadian rhythms and triggers the cycle of wakefulness and sleep. To keep this cycle balanced, it is crucial to make the most of the daylight available particularly because artificial lighting, to which many of us are subject, never delivers the same lighting quality as daylight. We can learn from the global nature of business, which often requires travel and adjustment to cities of varying qualities of light and diurnal phases.

This paper addresses the fact that the quality and contrast of light around the world varies and accordingly, the way we design workplaces in one city is not necessarily appropriate for another. Sadly globalisation has resulted in sometimes the same office building in vastly different environments. As architects practising across the globe, we have a unique opportunity to create a better workplace for people. This study suggests parameters for the depth of space and type of façade best suited to achieve a high performance workplace around the world.

No one (global) solution

The degree and nature of daylight penetration is a major factor contributing to the performance of the workplace.¹ Yet the property industry is misguided in its current assessment of what characterises a good workplace; daylight factors are generally ignored.

There is a growing reliance among designers and developers to employ uniform planning guidelines regarding the depth of space of commercial office buildings. Such guidelines are used globally and ignore vagaries of climate and variances of façades that filter the amount of available light into a workplace. What may be appropriate for an office building in London does not suit the design of buildings in Sydney.

Frequently the property industry applies an abstract set of criteria regardless of façade design, ceiling height, regional variances in the brightness of the sky or orientation. Such criteria are often employed by tenants (and their advisors) and have become widely accepted in the marketplace in the absence of a more considered approach. Globally uniform criteria, which disregard these broader influencing factors of daylight, become unreliable when assessing the quality of space in a workplace.

A diverse, but highly interrelated, set of building elements influence occupant performance in the workplace. This study demonstrates that the following four factors need to be considered in relation to the depth of floor space when designing the workplace:

- the skin of the building which filters light into the space;
- the height of the space to allow light penetration;
- the orientation of the workplace relative to the sun;
- the region or city that the building is located in and its associated cloud formations and effect on daylight penetration into buildings.

Investigating daylight and the workplace

Given that there is no reliable data upon which to assess the impact of daylight on the workplace, Woods Bagot initiated a study in collaboration with Arup engineers. The study was conducted over a six-month period and investigated the effect of daylight on the design of commercial office buildings around the world. This study forms part of a larger ongoing research program run by Woods Bagot that aims to develop more sophisticated design guidelines that take local conditions into account.

The study utilised a lighting simulation program based upon one generic floorplate with six differing façade types. These façade configurations were tested over four geographical locations that approximate the global range of varying climate and lighting conditions.

Location

The region or city that a building is located in and its associated climate and cloud formations influences the effect of daylight on the workplace.

To provide a global assessment tool, it is therefore necessary to identify key locations representative of the various generic global climates in which commercial office buildings are being designed. Our team selected four locations from different climate zones that vary in terms of their climate and sky types. London, Dubai, Singapore and Sydney were chosen as representative of most global locations relevant to this study.²

We collected weather data for each location over a typical twelve-month period, in order to determine the sky type, climate conditions and cloud distribution. Analysing each location, we were able to determine an annual average sky condition that would approximate daylight intensity penetrating the building envelope.

Skies were classified into three types based on the amount of cloud cover:

- overcast sky – predominantly overcast with mostly diffuse daylight radiating into the space;
- clear sky – clear sky contributing with direct sunlight and a lower component of diffuse daylight into the space;
- intermediate sky – a condition between overcast and clear sky types.

Even though sky types vary significantly in their illuminance distribution, the three distinct categories enabled a sufficiently accurate representation of the daylight distribution impact for each location. As this information, Daylight Distribution Impact, was available for every hour of the year it was possible to create a picture of an annual sky distribution for each location (Figures 1–4).

Annual Sky Types Distribution - Octas approach

- Overcast
- Intermediate
- Clear

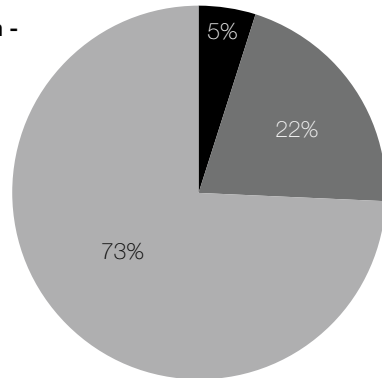


Figure 1: Dubai

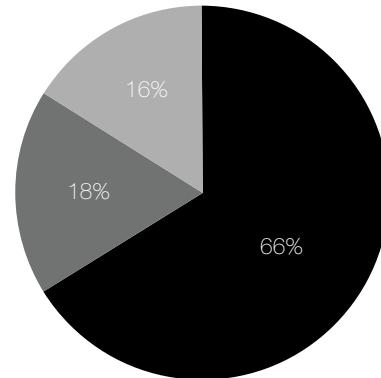


Figure 2: London

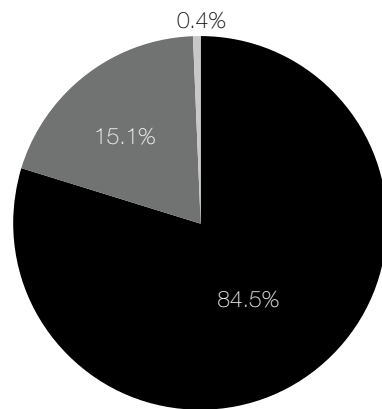


Figure 3: Singapore

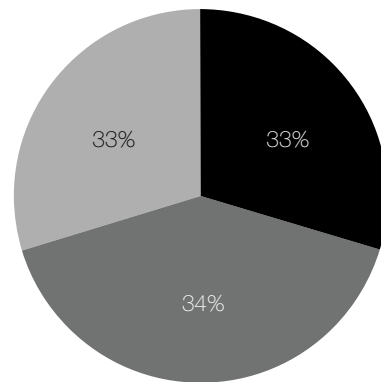


Figure 4: Sydney

Once the sky conditions were established, an Annual Average Sky Model was created for each of the locations. As this study is focused on the design of commercial office buildings, our model has been further refined to assess sky conditions during normal working hours. These hours have been assumed to be between 8 am and 6 pm. This enabled the creation of a Final Sky Model for each representative location based upon daylight illuminance levels as an average condition throughout the year during working hours.

By considering the variances of sky type, climate conditions and cloud distribution for a particular location, it is possible to more accurately test the design of building floorplates and façades in relation to the most often-occurring sky conditions during the year.

Floorplate model

Our simulation model is based on a simple 50m x 50m square building with a centre core of 10 x 10m. This model allows for a 20m depth of space to every façade orientation. While it is understood that the design of almost every office building varies in the size and core configuration to the model we have tested, our test model nonetheless provides a generic floorplate from which variances to this design can be extrapolated.

All diagrams indicate the north-facing façade to the top of page. The floorplate has been overlaid with a grid of 5m by 5m allowing the simulations to be interrogated in relation to façade option efficiency in delivering useful daylight based on local climate, and on orientation (Figure 5).

All simulations were done using the Arup 'Radiance' computer program, which allowed for an examination of the advanced lighting condition. The daylight simulation curves allow for the assessment of the level of daylight (Figure 6). Using this approach, areas of excessive brightness, not enough light and useful daylight can be identified.

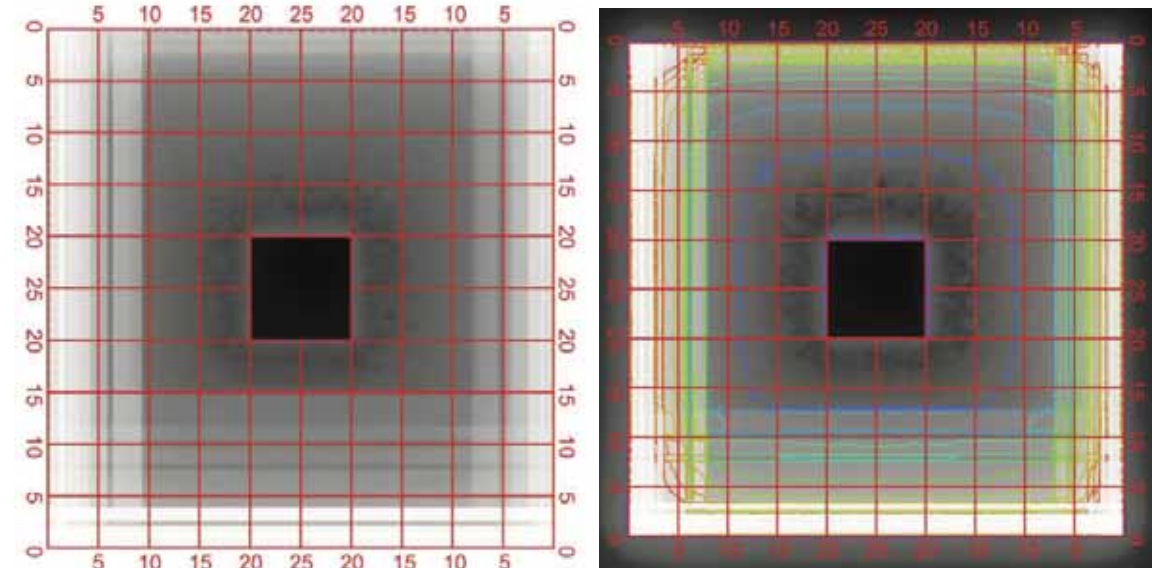


Figure 5: Simulation of floorplate configuration, where the scale shows distance from the perimeter in meters in a central core building form.

Figure 6: Daylight simulation curves using Radiance.

We assessed the illuminance of the floorplates using the Useful Daylight Illuminance (UDI) method (Nabil & Mardaljevic, 2005). This is designed to aid the interpretation of climate-based analysis of daylight illuminance and is a more appropriate method to the Daylight Factor (DF) approach. The UDI informs not only the useful daylight levels but also the likelihood of exceeding daylight levels that may be responsible for visual discomfort and unwanted solar gains. The UDI is capable of assessing daylight provision as well as solar penetration and daylight levels below the minimum targeted requirements.

For this study we adopted a UDI range of 250–2000 lux as we consider it to be the minimum desired, useful amount of daylight in an office space.

We divided the diagram into three zones (Figure 7): the area that has useful light in Yellow (250–2000 lux), the dim area in Orange (250 lux or less) and the bright area in Light Yellow (2000 lux or more).

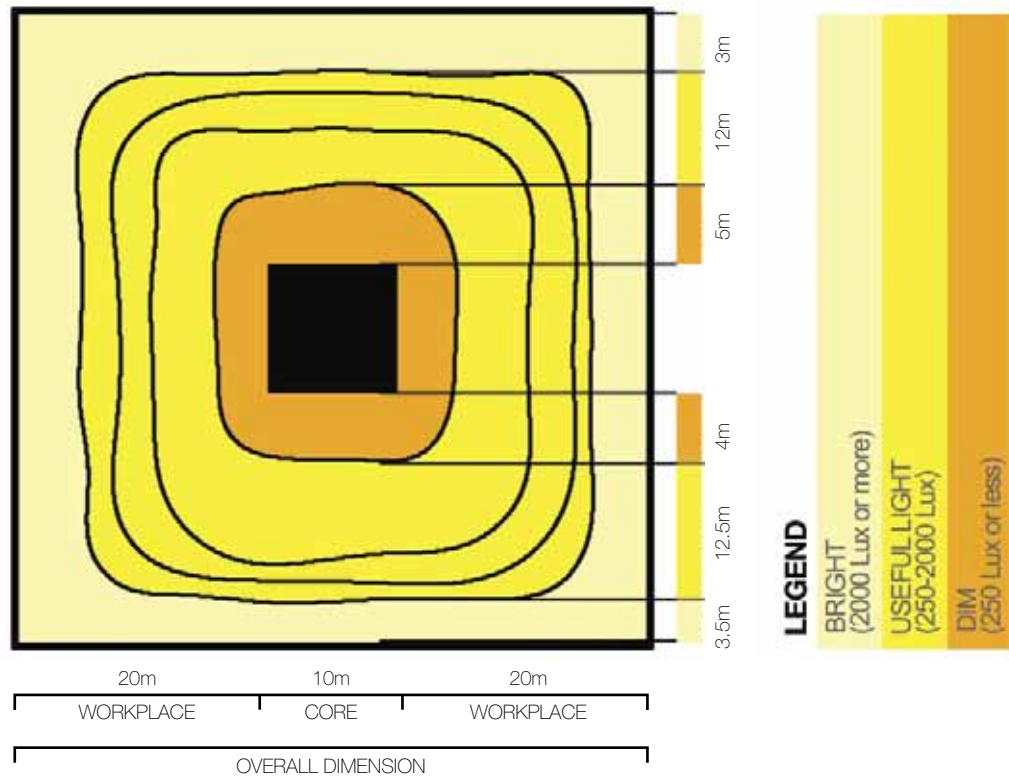


Figure 7: Daylight penetration zones based on UDI approach.

Façade types

The type of façade of commercial office buildings affects the amount and quality of light that enters the workplace.

Our study examined six façade types from which we interpolated results for façades most commonly employed in contemporary buildings. Of these six façade types, we introduced three variables:

- Ceiling (and window) height (2.7m and 3.2m);
- Shading shelf of 500mm to reduce direct sunlight glare;
- Light redirecting panel³ located above the shading shelf to minimise indirect sunlight glare.

Clear glass was employed in the façade types tested as this was considered the best base condition from which to assess façades of varying Visible Light Transmission (VLT)⁴. The sketches below (Figures 8–13) illustrate the six façade types studied.

Type 1, 2 and 3 represent a 2.7m ceiling height. Type 4, 5 and 6 represent a 3.2m ceiling height.

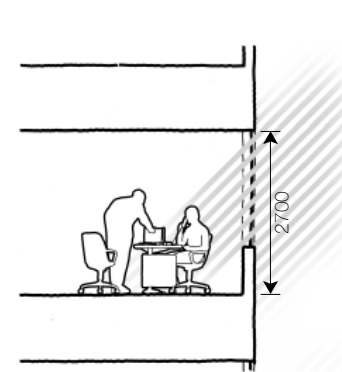


Figure 8: Type 1 Standard curtain wall

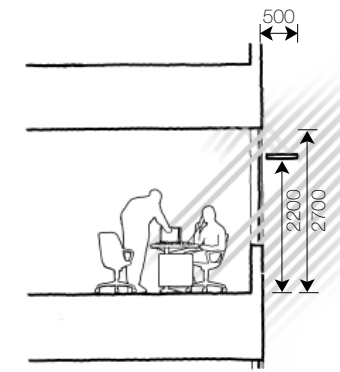


Figure 9: Type 2 Curtain wall with shading shelf

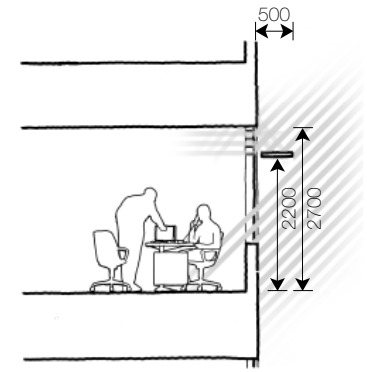


Figure 10: Type 3 Curtain wall with shading shelf and light redirecting panel

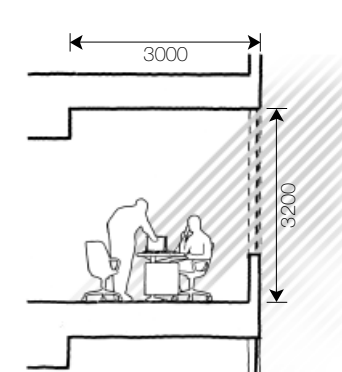


Figure 11: Type 4 Standard curtain wall and raised ceiling

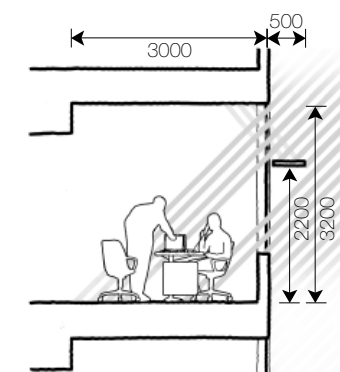


Figure 12: Type 5 Curtain wall with shading shelf and raised ceiling

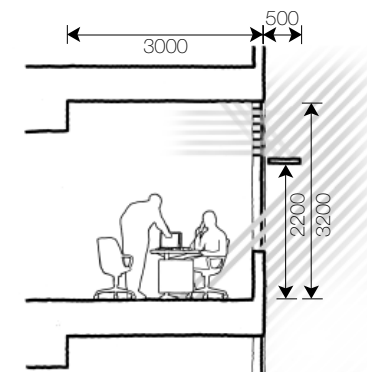
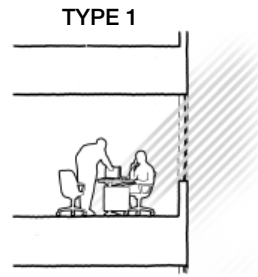


Figure 13: Type 6 Curtain wall with shading shelf, light redirecting panel and raised ceiling

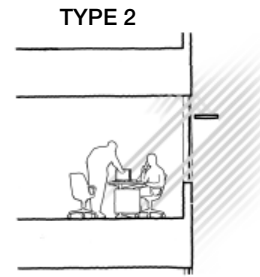
Comparative matrix

The six façade types studied were tested across the four key geographical locations as illustrated in the diagrammatic matrix (Figure 14). This comparative matrix of 24 figures enables:

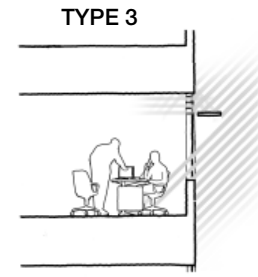
- The appropriate depth of a floorplate to be established for buildings across the globe. This assessment is based upon the quality of light in a particular climate and the design of the façade of the building.
- An assessment of a façade's suitability for a particular global location and orientation.



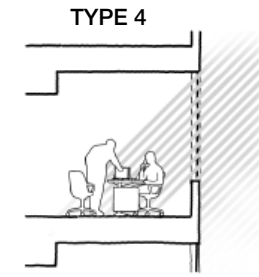
- Curtain wall
- 2.7m ceiling height



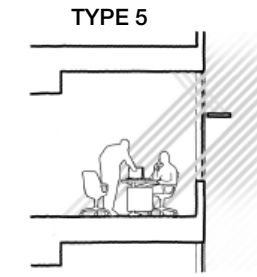
- Curtain wall
- 2.7m ceiling height
- Shading shelf



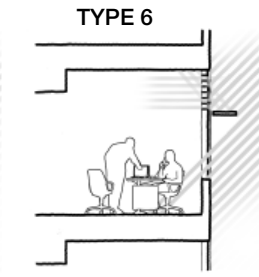
- Curtain wall
- 2.7m ceiling height
- Shading shelf
- Light redirecting panel



- Curtain wall
- 3.2m ceiling height



- Curtain wall
- 3.2m ceiling height
- Shading shelf



- Curtain wall
- 3.2m ceiling height
- Shading shelf
- Light redirecting panel

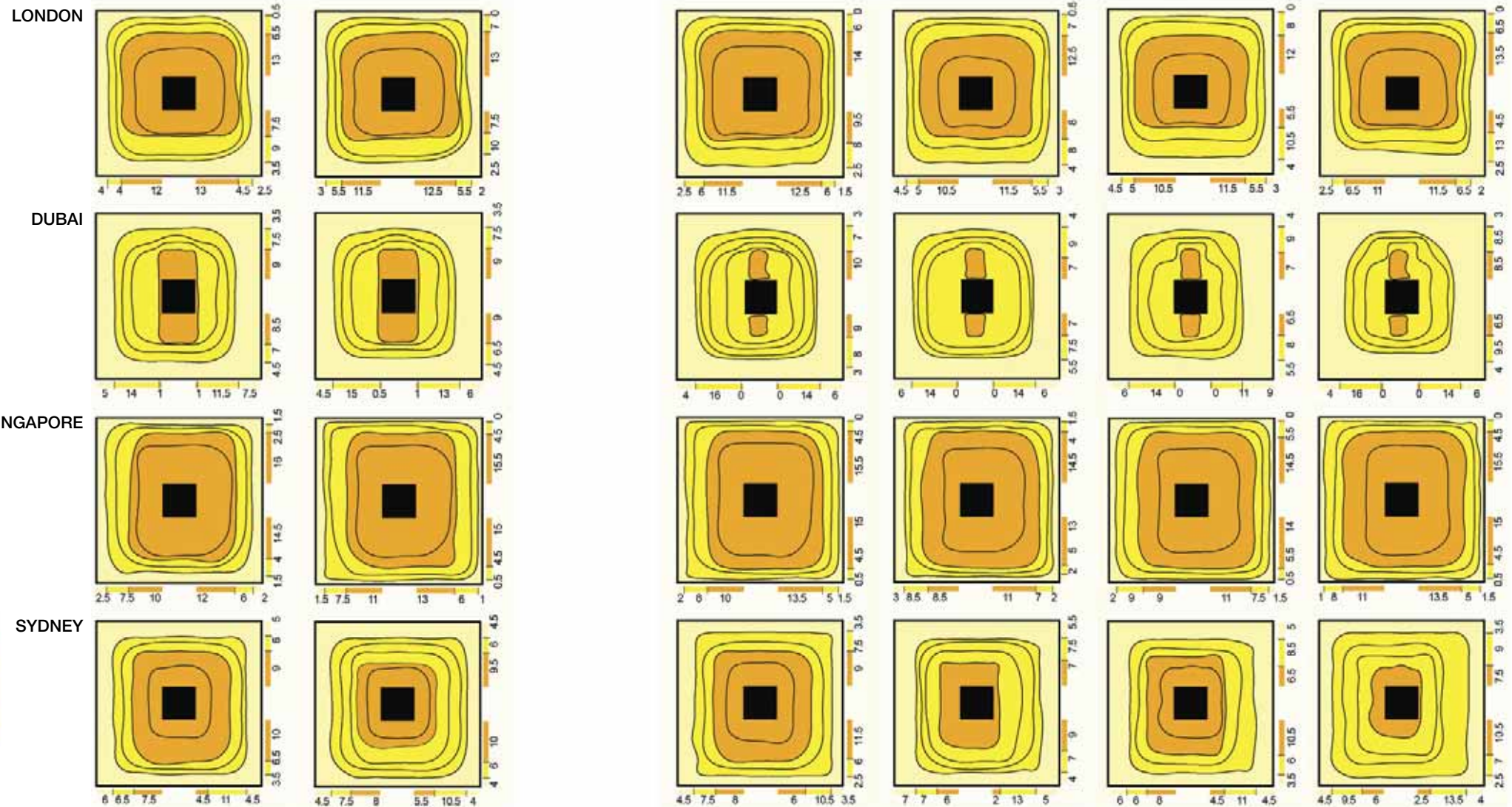


Figure 14: Daylight penetration matrix comparing 6 façade designs in 4 locations.

A more detailed interrogation of daylight penetration and lux levels can be undertaken by reviewing the output of the 'Radiance' computer model (Figure 15).

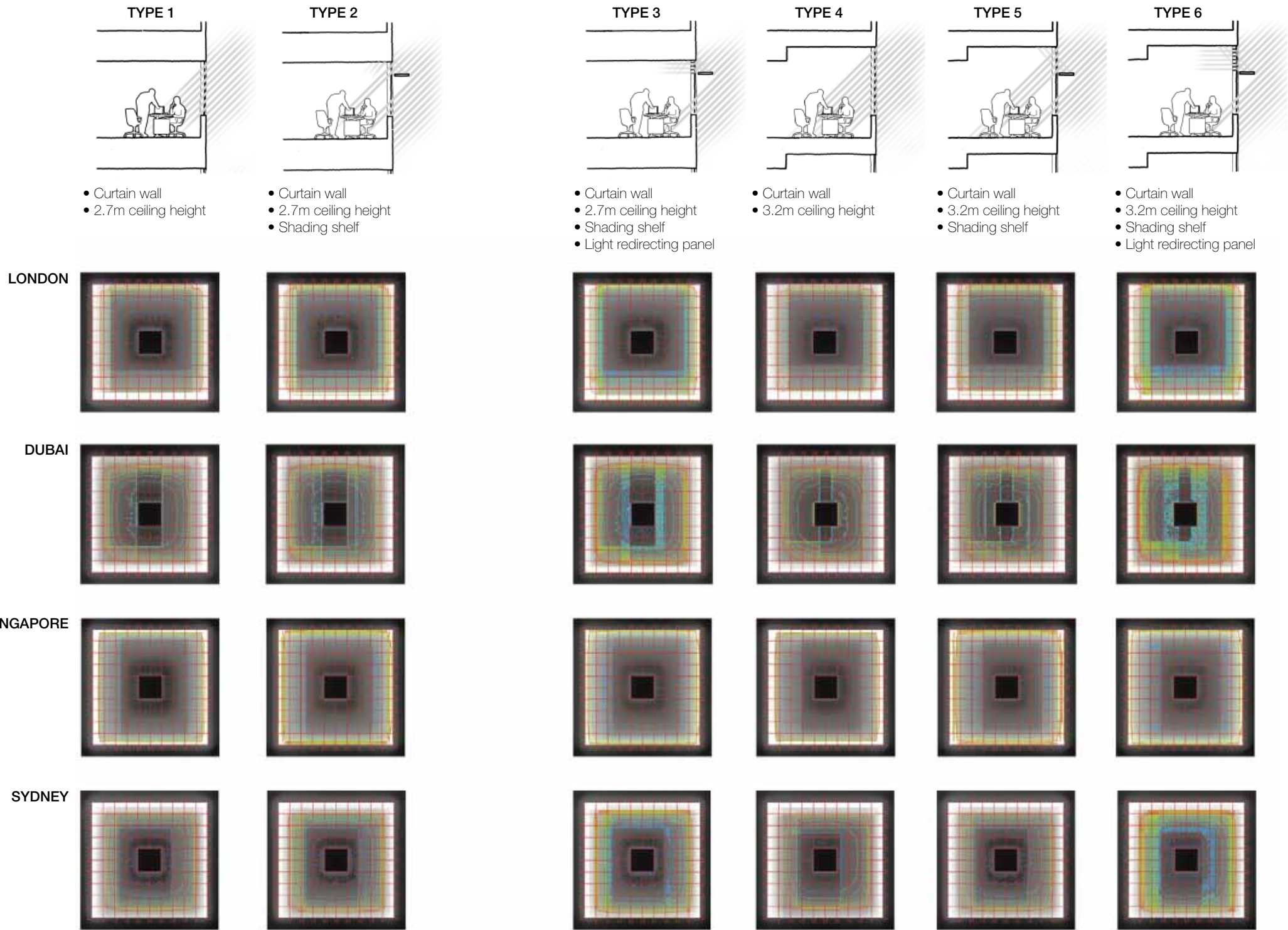


Figure 15: 'Radiance' computer model matrix comparing 6 facade designs in 4 locations.

The maximum depth of space can be determined from the daylight penetration matrix. For the purpose of this study we have calculated the maximum depth of space to be areas receiving a minimum of 250 lux (Figure 16).

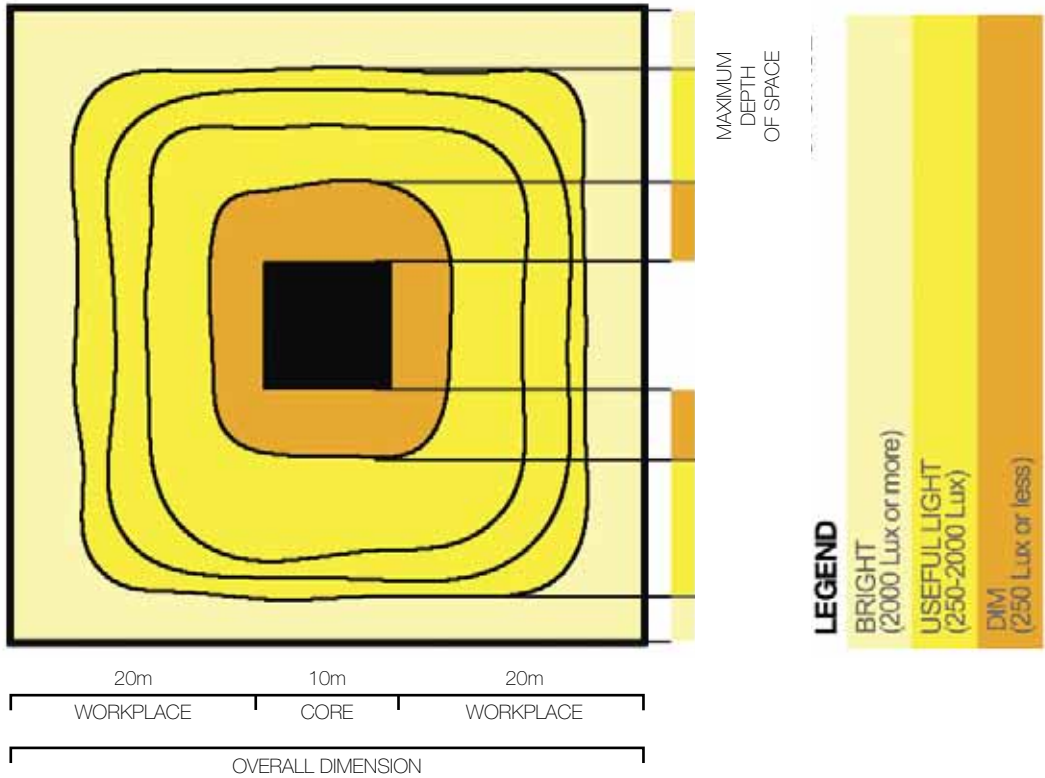


Figure 16: Maximum depth of space illustration.

The table below summarises the maximum depth of space for all façade types, locations and orientations (Figure 17). These dimensions identify the maximum depth of space that receives a minimum light level of 250 lux.

	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5	TYPE 6
LONDON						
North	7m	7m	6m	7.5m	8m	6.5m
East	7m	7.5m	7.5m	8.5m	8.5m	8.5m
South	12.5m	12.5m	10.5m	12m	14.5m	15.5m
West	8m	8.5m	8.5m	9.5m	9.5m	9m
DUBAI						
North	11m	11m	10m	13m	13m	11.5m
East	19m	19m	20m	20m	20m	20m
South	11.5m	11m	11m	13m	13.5m	13.5m
West	19m	19.5m	20m	20m	20m	20m
SINGAPORE						
North	4m	4.5m	4.5m	5.5m	5.5m	4.5m
East	8m	7m	6.5m	9m	9m	6.5m
South	5.5m	5m	5m	7m	6m	5m
West	10m	9m	10m	11.5m	11m	9m
SYDNEY						
North	11m	10.5m	11m	13m	9m	12.5m
East	15.5m	14.5m	14m	18m	15.5m	17.5m
South	10m	10m	8.5m	11m	9.5m	9.5m
West	12.5m	12m	12m	14m	12m	14m

Figure 17: Maximum depth of space (250 lux or more). Dimensions in meters.

Findings

Daylight penetration varies significantly in each of the different locations. Key insights from this study are:

Floorplate depth: The optimum floorplate depth obviously varies from one city to another. Moreover, the usable floorplate depth is not uniform from one aspect to another. For example in Sydney, the usable floorplate depth is deeper when orientated to the east and west (due to low angle incident light), rather than to the north and south. At the same time it's important to note that these insights need to be balanced with the constraints imposed by sun glare and solar radiation which is predominant in east and west orientations.

Ceiling height: Adjusting the ceiling height offers significant improvement to use of daylight levels by ensuring useful daylight penetrates as deeply as possible into the floorplate.

Shading shelf: Horizontal shading provided some improvement in optimising useful daylight levels along the façade in Dubai but had little or no improvement in locations characterised by diffuse sky such as Singapore and London. Its application is more useful in blocking direct sun and dealing with glare at the perimeter zones in climate types where direct light is predominant, such as Dubai and Sydney.

Light redirecting panel: Light redirecting panels have the capacity to improve useful daylight by reducing excessive daylight and glare at the perimeter zones and deflecting daylight into deep areas of the floorplate. They provide an improvement in daylight use for all sky conditions but mainly in clear skies. It is possible to increase the UDI depth by 3.0m in clear sky locations (such as Dubai); and 1.0 – 1.5m in locations characterised by overcast skies (such as Singapore). Light redirecting panels have been shown to be most useful for east and west orientations.

Using space planning based models for determining depth of space is clearly an over-simplified approach which, if applied globally, leads to buildings that are suitable for perhaps London and Singapore, but certainly not for Sydney or Dubai.

Determining ideal floorplate configurations

While daylight illuminance analysis is a powerful tool, there are other factors that need to be considered – view, glare, visual contrast and ventilation, and their relationship to specific locations. The new guidelines used for the design of more sophisticated office buildings are taking into account the following factors:

- 1. Direct and indirect glare:** The amount of glare – which varies enormously depending on the location – determines the way in which a floorplate can be used.
- 2. View expectation:** There is a great deal still to be utilised for the psychology of view expectations and the cultural bias that aligns with the degree of urbanisation and quality of exterior landscape. Having access to a view allows people to feel connected to the outside world and there are enormous differences to be felt depending on the location. For example, a view in Dubai is often not considered as important as it is in a workplace fronting Sydney Harbour.
- 3. Contrast pattern recognition:** The human sensory system welcomes a degree of variety in lighting levels depending on the task it is engaged in. This is also known as "sensory variability" (Heerwagen, 1998) and the manner in which a workplace is to be used determines whether high or low stimulation is preferred. Detailed study to provide brightness contrast control guidelines to increase performance and decrease physiological fatigue in the workplace (Grandjean, 1985) is necessary.
- 4. Fresh air volumes:** Increasing fresh air volume affects performance and careful research is required to empirically assess the correlation of fresh air volumes within the workplace with rates of absenteeism.

Benefits of the study

From this research we know that daylight and its usage is a major factor in creating a better workplace. Furthermore, the location of an office building, its solar orientation and the design of the skin of the building that filters light into a workplace, are fundamental to assessing quality of work environments and optimum depths of space.

The property industry now has a more comprehensive method for assessing floorplates and designing high performance buildings. It is clear, from this study, that we can no longer assume that the design for an effective work environment in London will be the same as that required in Sydney.

By designing a workplace that is intrinsically linked to its location and the enclosing building fabric, the industry can now deliver more comfortable environments which in turn will improve asset value and people performance. In addition, real economies can be realised by employing these findings to drive efficiencies of energy usage by optimising building operation and minimising the use of artificial light – a more sustainable model.

By investigating how the benefits of daylight can be maximised, we have the tools to create a brighter future.



Decoration for motivation: The effects of colour and pattern in the workplace

1 White is included because it is currently the dominant colour in offices (Kwallek, Woodson, Lewis, & Sales, 1997). It also offers an achromatic control for comparison with red and blue.

2 Although both indigo and violet are composed of shorter wavelengths than blue, Figure 3 indicates their somewhat unpredictable influence on arousal. As a possible explanation, Wilson (1966) suggests that wavelengths towards *either* end of the visible spectrum are arousing. Furthermore, blue is more commonly associated in the literature with the adjective *cool*, and the majority of studies have used blue (and occasionally green) to indicate this dimension.

3 Alternatively, some organisations have installed individual lights at each workstation that can emit illumination at certain predetermined wavelengths. Such a system may offer additional benefits, as granting occupants control over their environment has been linked to a number of positive outcomes (Huang, Robertson, & Chang, 2004; Lee & Brand, 2005).

Appelle, S. (1972). Perception and discrimination as a function of stimulus orientation: The "oblique effect" in man and animals. *Psychological Bulletin*, 78, 266–278.

Apter, M. J. (1984). Reversal theory and personality: A review. *Journal of Research in Personality*, 18, 265–288.

Aslam, M. M. (2006). Are you selling the right colour? A cross-cultural review of colour as a marketing cue. *Journal of Marketing Communications*, 12, 15-30.

Baron, R. S., Moore, D., & Sanders, G. S. (1978). Distraction as a source of drive in social facilitation research. *Journal of Personality & Social Psychology*, 36, 816–824.

Cárdenas, R. A. & Harris, L. J. (2006). Symmetrical decorations enhance the attractiveness of faces and abstract designs. *Evolution & Human Behavior*, 27, 1–18.

Hebb, D. O. (1955). Drives and the C.N.S. (Conceptual Nervous System). *Psychological Review*, 62, 243–254.

Huang, Y., Robertson, M. M., & Chang, K. (2004). The role of environmental control on environmental satisfaction, communication, and psychological stress: Effects of office ergonomics training. *Environment & Behavior*, 36, 617–637.

Hull, C. L. (1943). *Principles of behaviour*. New York: Appleton-Century-Crofts.

Jacobs, K. W. & Blandino, S. E. (1992). Effects of colour of paper on which the profile of mood states is printed on the psychological states it measures. *Perceptual & Motor Skills*, 75, 267–271.

Jacobs, K. W. & Suess, J. F. (1975). Effects of four psychological primary colours on anxiety state. *Perceptual & Motor Skills*, 41, 207–210.

Krupinski, E. & Locher, P. (1988). Skin conductance and aesthetic evaluative responses to nonrepresentational works of art varying in symmetry. *Bulletin of the Psychonomic Society*, 26, 355–358.

Kwallek, N. (1996). Office wall colour: An assessment of spaciousness and preference. *Perceptual & Motor Skills*, 83, 49–50.

Kwallek, N. & Lewis, C. M. (1990). Effects of environmental colour on males and females: A red or white or green office. *Applied Ergonomics*, 21, 275–278.

Kwallek, N., Lewis, C. M., Lin-Hsiao, J. W. D., & Woodson, H. (1996). Effects of nine monochromatic office interior colours on clerical tasks and worker mood. *Colour Research & Application*, 21, 448–458.

Kwallek, N., Lewis, C. M., & Robbins, A. S. (1988). Effects of office interior colour on workers' mood and productivity. *Perceptual & Motor Skills*, 66, 123–128.

Kwallek, N., Soon, K., Woodson, H., & Alexander, J. L. (2005). Effect of colour schemes and environmental sensitivity on job satisfaction and perceived performance. *Perceptual & Motor Skills*, 101, 473–486.

Kwallek, N., Woodson, H., Lewis, C. M., & Sales, C. (1997). Impact of three interior colour schemes on worker mood and performance relative to individual environmental sensitivity. *Colour Research & Application*, 22, 121–132.

Latto, R., Brain, D., & Kelly, B. (2000). An oblique effect in aesthetics: Homage to Mondrian (1872–1944). *Perception*, 29, 981–987.

Lee, S. Y. & Brand, J. L. (2005). Effects of control over office workspace on perceptions of the work environment and work outcomes. *Journal of Environmental Psychology*, 25, 323–333.

Mahnke, F. H. & Mahnke, R. H. (1987). *Colour and light in man-made environments*. New York: Van Nostrand Reinhold Co.

Marković, S. & Gvozdenović, V. (2001). Symmetry, complexity and perceptual economy: Effects of minimum and maximum simplicity conditions. *Visual Cognition*, 8, 305–327.

Rhoades, L. & Eisenberger, R. (2002). Perceived organisational support: A review of the literature. *Journal of Applied Psychology*, 87, 698–714.

Seo, M., Barrett, L. F., & Bartunek, J. M. (2004). The role of affective experience in work motivation. *Academy of Management Review*, 29, 423–439.

Stone, N. J. (2001). Designing effective study environments. *Journal of Environmental Psychology*, 21, 179–190.

Stone, N. J. & English, A. J. (1998). Task type, posters, and workspace colour on mood, satisfaction, and performance. *Journal of Environmental Psychology*, 18, 175–185.

Walters, J. Apter, M. J., & Svebak, S. (1982). Colour preference, arousal, and the theory of psychological reversals. *Motivation & Emotion*, 6, 193–215.

Wexner, L. B. (1954). The degree to which colours (hues) are associated with mood-tones. *Journal of Applied Psychology*, 38, 432–435.

Whitfield, T. W. A. & Wiltshire, T. J. (1990). Colour psychology: A critical review. *Genetic, Social, & General Psychology Monographs*, 116, 387–411.

Wilson, G. D. (1966). Arousal properties of red versus green. *Perceptual & Motor Skills*, 23, 947–949.

Wohlfarth, H. & Gates, K. S. (1985). The effects of color-psychodynamic environmental colour and lighting modification of elementary schools on blood pressure and mood: A controlled study. *International Journal of Biosocial Research*, 7, 9–16.

Yerkes, R. & Dodson, J. (1908). The relation of strength of stimulus to rapidity of habit-formation. *Journal of Comparative Neurology & Psychology*, 18, 459–482.

Zajonc, R. B. (1965). Social facilitation. *Science*, 149, 269–274.

Let there be light: Design implications of daylight penetration

1 This study is focused on examining the impact of light in the creation of the high performance workplace. Little study in this area has been undertaken to date and the field is broad. Additional work is also required to assess the impact of view, glare, visual contrast and ventilation on the workplace as outlined at the end of this paper.

2 A more detailed assessment of climatic conditions for particular locations is required in order to assess the impact of daylight on workplaces in locations not identified in our study. However, the findings of this study can be extrapolated to provide guidelines for such locations.

3 Light redirecting panels (e.g. laser cut panels) are used to improve the distribution of daylight in a room and reject unwanted solar gains. Light and heat gain are reflected or refracted towards the normal upon entering the device. The optics of the light redirecting device may be characterised by a portion of light being reflected, a portion of light being refracted and a portion of light being unreflected

4 Decreasing the Visible Light Transmission (VLT) of the glass will have the effect of reducing excessive daylight levels often encountered with clear glass. Altering the VLT is the most effective method of tuning daylight levels in locations of diffuse light. However, shading devices and light redirecting devices are more effective to control daylight levels in locations of predominantly direct sunlight.

Grandjean, E. (1985). Ergodesign 84, Montreux, 6-9 November 1984. *Behaviour & Information Technology - BIT*, 4, 75-76.

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*, 15, 169-182.

Nabil, A. & Mardaljevic, J. (2005). Useful daylight illuminance: A new paradigm for assessing daylight in buildings. *Lighting Research & Technology*, 37, 41-57.

Y bother

Pink, D. H. (2005). *A whole new mind: Moving from the information age to the conceptual age*. Sydney: Allen & Unwin.

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