Volker Auch-Schwelk

Helle Daugbjerg

Philipp Dreher

Alex Haw

Gabu Heindl

Chris Leung

Prof. Grahame MacDougall

Karina Mose

Martina Schäfer

Klaus Spechtenhauser

Jurjen Zeinstra

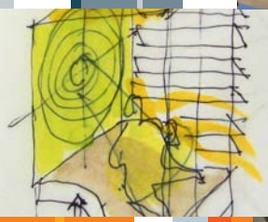
PHILIPS

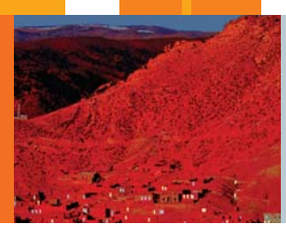
www.dynamiclighting.philips.com

New visions on Dynamic Lighting

New visions on Dynamic Lighting

Marrakech, 23 - 27 June 2005





PHILIPS

Chris Leung

The Bartlett School of Architecture, University College London

Going With the User Flow

biography

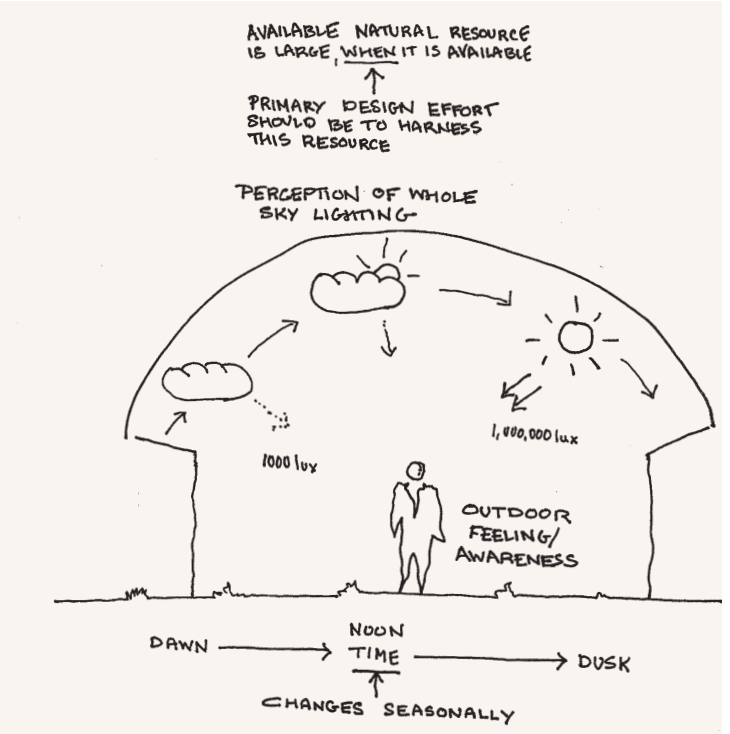
1972	born
1994	Degree in Architecture, BSc Bartlett, University College London
1998	Diploma in Architecture, DipArch Bartlett, University College London
1999	YRM Architects (Healthcare projects)
2000	Masters in Architecture, MArch Bartlett, University College London
since 2000	part-time involvement in the Interactive Architecture Workshop, Diploma UNIT 14, Bartlett, University College London
2002	RIBA III Professional Practice Exams, Bartlett, University College London
2002	Certificate in Professional Practice
2003	YRM Architects (major healthcare projects)
2005	Kielder Art and Architecture Residency, Kielder Forest and Reservoir

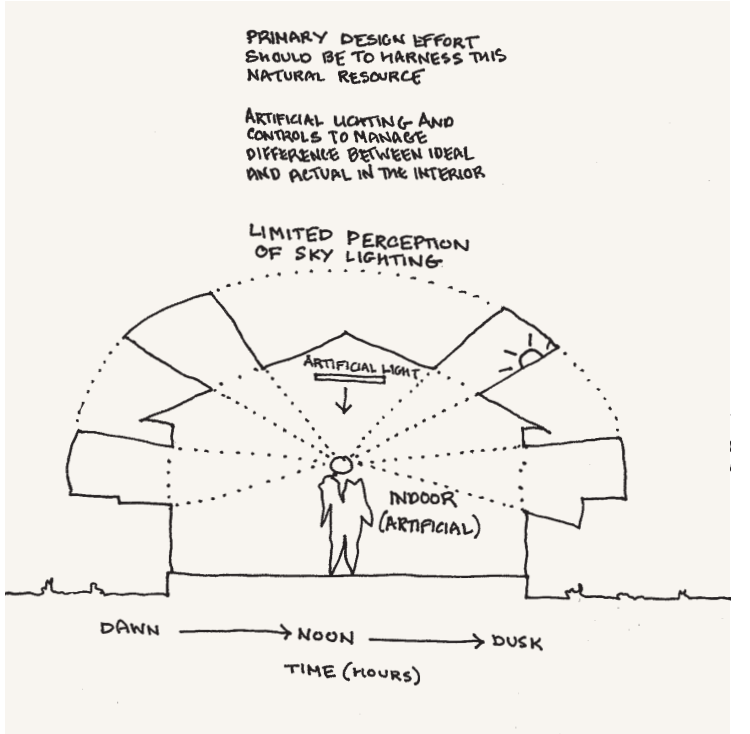
Going With the User Flow

In his project, Chris Leung presents two complementary systems to the "Dynamic Lighting" concept. With the help of daylight sensors, the aim is to make the lighting system react in real time to changes of the daylight entering the room. The main objective is to save energy but continuous alteration of the level and color of the lighting is also valuable in itself, according to Chris Leung.
With his second modification, Chris Leung wants to track down individual user preferences. Who uses what light and what for? Answers to these questions could help to make lighting systems more user-friendly as a whole.

Philips presented their "Dynamic Lighting" concept as a system for controlling the illumination and colour temperature of space lighting to a time-base, motivated by the desire to compensate for the effects on natural bio-rhythms of those working in a standard uniformly lit office space during a working day.
Philips' concept is interpreted as a compensation on the basis that designing a lighting installation to be uniform across surfaces and constant over time creates an inherently artificial environment, for far longer than the invention of the incandescent light bulb humans have been tuned to variations in the quality of light as rendered by the Sun through the Earth's atmosphere. To compensate for this by utilising available technology to vary luminance and colour temperature under computer control with programmed fixed-scene changes to a schedule is effectively to try to simulate some of the characteristics of daylight.
Philips presented the concept as lighting with two components: Dynamic Ambient and Personal Lighting. For cases other than spaces with no windows at all, neither of these operate in isolation from a wider context of the amount of daylight available through the building's envelope, it is also suggested that user choice of personal lighting is in large part task-oriented. Following from this, two complementary systems to the "Dynamic Lighting" concept are suggested by this workshop project.

Chris Leung's starting point is the natural level of daylight and its colors as well as the question as to how they can be controlled so that they become something that can be experienced by the user indoors.





In this concept, the only purpose of the artificial light is to compensate for the difference between natural lighting and ideal lighting in a room.

Dynamic Ambient – A response to daylight

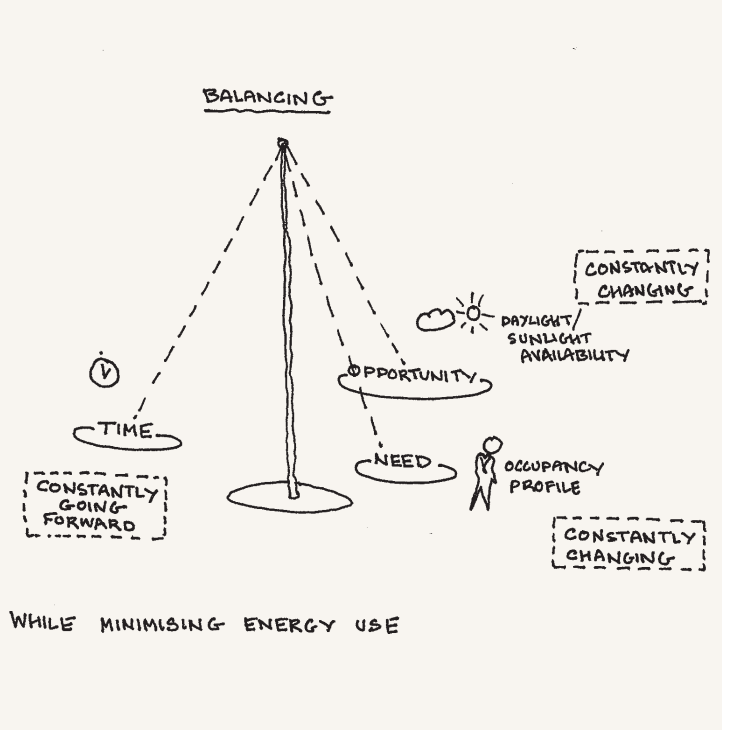
The first complementary system would be sensing and decision-making that biased the lighting installation control system to respond in real-time to changes in daylight above and beyond the target lighting levels of the time scheduled scenes. This could be tuned to both luminance and colour temperature by measurement of external lighting. Obviously the potential benefits would be greater wherever in the building daylight is available and the scope for doing it would depend on the spatial relationships between the working environment and the building's fenestration. Making use of available daylight obviously has the scope to increase energy efficiency by dimming down the Dynamic Ambient luminance levels for a given required lighting level. The main point suggested is that subtle variation and response to external lighting conditions is a benefit in its own right by creating visual reminders of the sky outside. What for example could the response by the Dynamic lighting concept be if the external sensors recognised the optical phenomenon of a rainbow forming when the sun rises behind the building after rain has fallen? It is conceivable that a rainbow also be created across the ceiling internally.

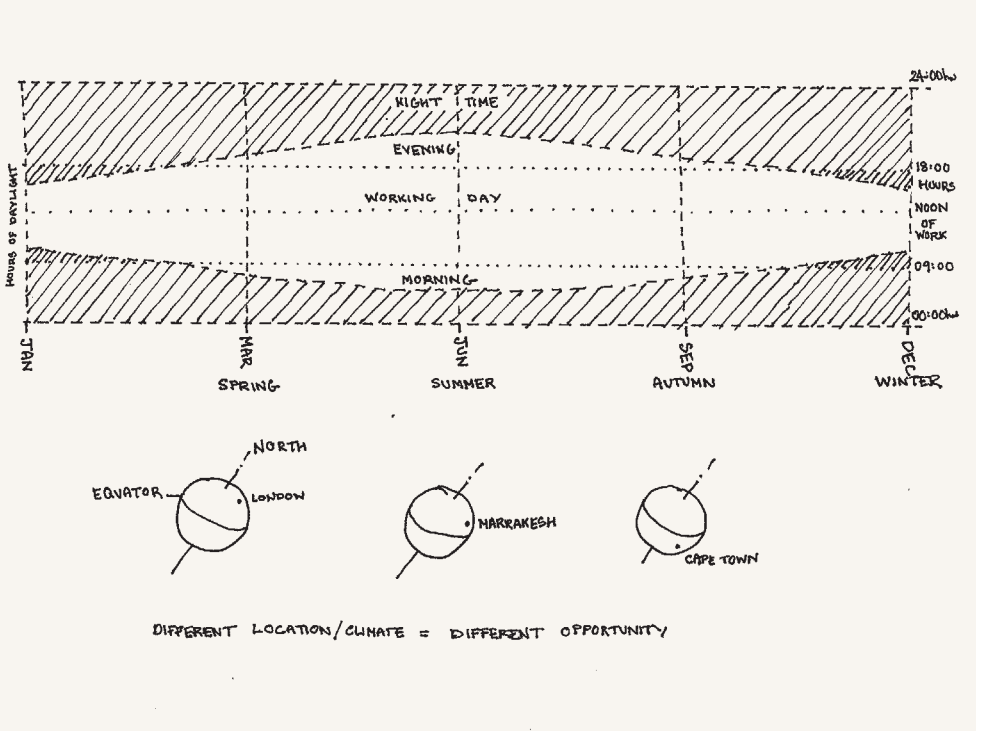
Personal Lighting – Going with the user flow

The second complementary system focuses on the choices made by a user if and when to control their personal lighting within the context of the decisions made by the global control system. Potential responses by the control system to user preferences could be generated if a profile of a user's preferences could be inferred based on logging patterns of use over time. What kind of tasks was the user doing when they chose to use their personal lighting? What were people around a particular user choosing to do with their task lighting at the time? Could the system be designed to recognise the task context that the personal lighting is being used in? The assumption is made that there is not necessarily any consensus about what is a comfortable local lighting level, even working in teams individual users have individual tasks and subsequently preferences.

The aim of the project is to balance the different influences of time of day, user needs and the daylight which is available.

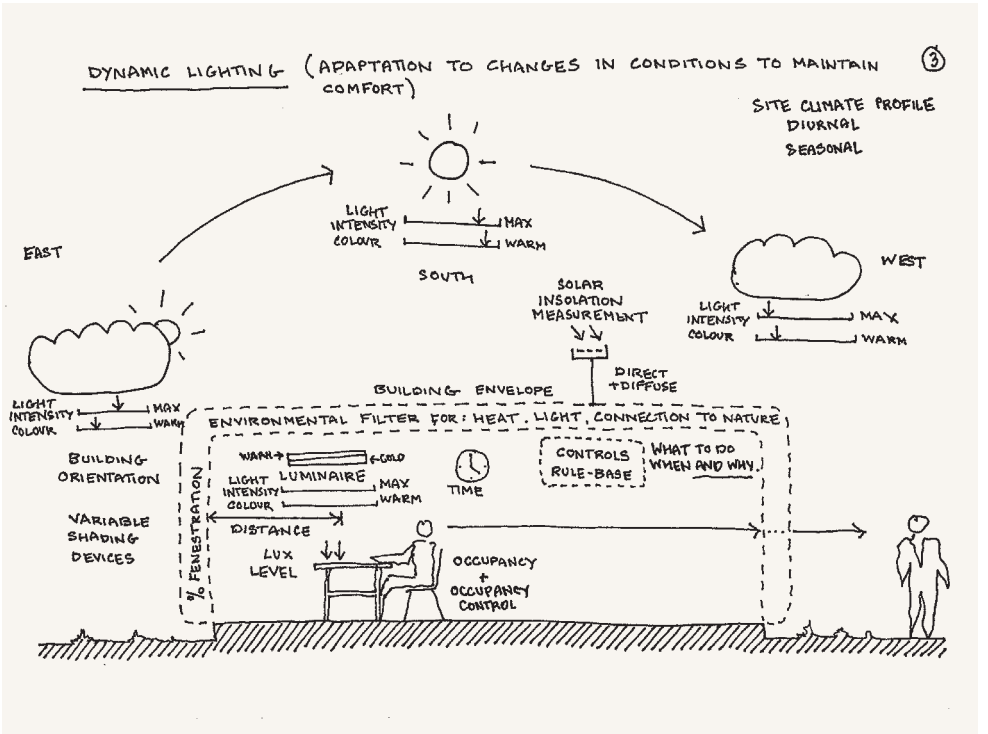
Opposite page:
The availability of daylight depends on the time of day and on the geographical latitude.



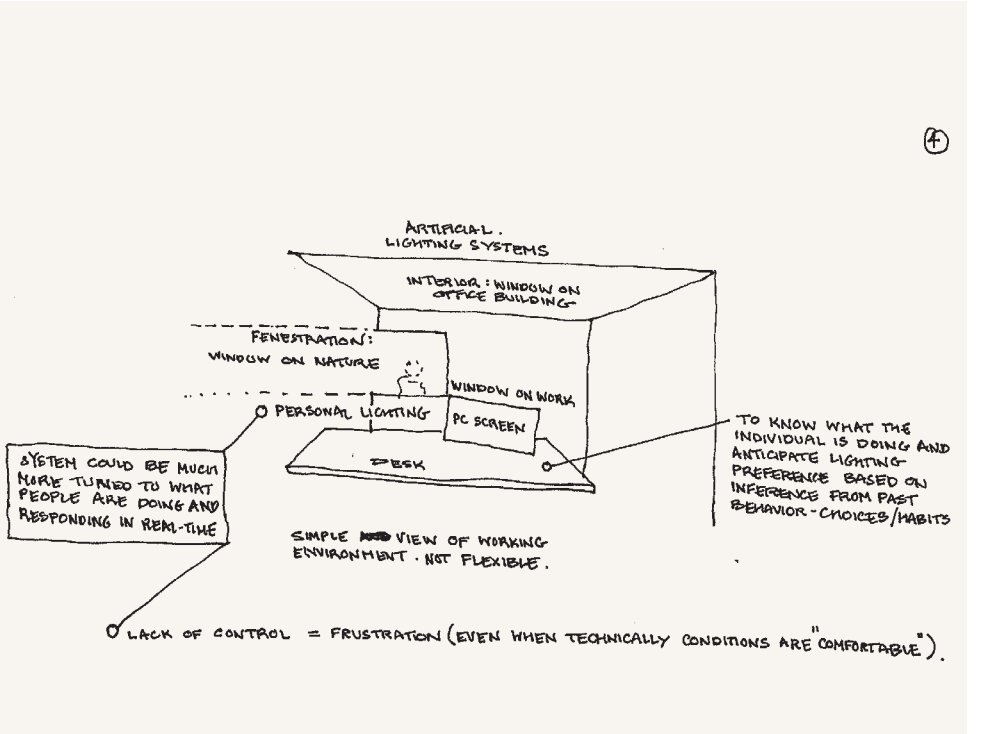


Going With the User Flow

The influencing forces of the "Dynamic Lighting" concept and their interaction with each other. Interior space and exterior space interact with each other directly through the enclosing parts of the building, and indirectly by means of intelligent control systems.



According to Chris Leung's idea, ideal office lighting should anticipate the individual needs of the user and convert them into a "Personal Lighting" scenario.



Going With the User Flow

Opposite page:
With the help of person-related and use-related profiles, the lighting system could react to the needs of individuals much more specifically than before.

Below:
"Personal Lighting" in use. Even when working in a team, all the users have their own very specific tasks and their own personal preferences - and therefore their own lighting requirements as well.