

# Designing with light and air for sustainability and wellbeing

The authors introduce the book and Gary Young reviews it

*Healthy Homes: Designing with Light and Air for Sustainability and Wellbeing* by Nick Baker and Koen Steemers RIBA Books  
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We are becoming accustomed to the criterion of “evidence – based decisions” about drug and medical treatments, and in that context, few would argue with the logic. In writing this book, we set out to base recommendations for healthy design on a similar basis – to draw upon the extensive literature in the fields of environmental health, well-being and psychology. However, we immediately found that it is not straightforward, because unlike clinical drug trials, it is unusual for these to be focussed on specific issues, in our case architectural design.

For example, whilst there might be statistically sound correlations between contact with nature and children’s educational development, contact with nature is not defined in such a way that is immediately translatable to an architectural solution. Is it the view through the window, the size of the window, the presence of a balcony, the distance from the nearest park? A more prosaic example – there is much evidence that cleaning products and other household chemicals contain dangerous and even carcinogenic substances. But does this really warrant a secure air-tight store ventilated direct to outside? Will the reduction of indoor air pollution be significant to the health of the occupants?

Thus, there has had to be an element of personal judgement and belief. In our preface we have made reference to the Hippocratic Oath of “do no harm”, and this has been a good starting point. There is a long and continuing history of buildings being harmful to their occupants – cold, damp, mould-spore ridden, dark, gloomy and depressing in winter, then overheated in summer; noisy from neighbours, road traffic and aircraft, with dangerous off-gassing from materials, not to mention risk from fire. So, the successful application of the Oath would in itself be a worthwhile objective. A claim that building design can go beyond this, creating an environment that is positively good for you, (like a walk in the countryside), is of course relative to a perceived norm, for which we have no definition.

Another issue we had to grapple with is that of conflicting influences. The large window giving fine views of distant natural landscape, bathing the room in healthy daylight, could also be a source of traffic noise, and/or solar gain, unwanted in summer, and maybe an uncomfortable loss of visual privacy. The overriding result could be dependent upon the spatial context, or even the occupants; for example, the needs and tolerances of a retired couple being very different from that of a young family.

How to weight the relative importance of these conflicting influences, we have left unresolved. We have not proposed a points system, where we add up scores and decide whether the advantages of an openable window onto a sunny but noisy and



polluted garden outweigh the disadvantages. Instead, we have advocated the principle of adaptive opportunity. This term, which was initially applied to thermal comfort, is the observation that a person’s perceived and actual opportunity to make changes in his/her environment in order to reduce thermal discomfort, results in their being more satisfied than predicted from simple thermal comfort models. However, we believe that this principle applies to other physical and possibly psychological parameters. For example, we have all witnessed people taking coffee seated at a table on a busy street, experiencing conditions of noise and pollution that would be unacceptable in almost any other situation. The explanation is they sit there voluntarily and have the opportunity to move inside. They make the evaluation of the conflicting factors there and then – it is not pre-determined.

Of all animal species, humans have always shown amazing adaptability; so successful has this strategy been in our evolution that we have become the dominant species many times over – a bloom, many would say a plague – on this planet. It is ironic that it is in recent times that due to engineering possibilities, and notions of optimised or “perfect” environmental solutions, the opportunity for adaptive behaviour in the built environment has been steadily eroded. We believe designers should consciously address the environmental conflicts, as exemplified >>>

>>> above, by providing intuitive building controls – e.g. shading, openable windows, accessible heating controls etc., and anticipating and testing plausible adaptive avenues that the occupant can take. It is not so much the provision of the “correct” or “optimum” healthy environment, but more one that is “good enough” and allows the occupant to make healthy adaptive choices.

The structure of the book implicitly reflects these ideas. Part One is a critical review of the wide-ranging literature on environmental health, psychology and well-being, and on the emerging design guidance and codes of practice relating to this. Part Two is concerned with the physical manifestation of the building on its site, and its response to local and global conditions. As well as the familiar aspects of heat light and sound,

## Healthy Homes reviewed by Gary Young

A much needed appraisal of the current state of design for wellbeing, this book covers the broad range of issues affecting living environments and impacts on psychological and physical health. The writing is accessible, adopting a sustainability audit approach which will be useful for students and designers in urban design and housing. The authors refer to the available evidence and acknowledge the need for the evidence base to be further developed.

The benefits of improved daylight, ventilation and sanitation have a crucial history and legacy in influencing housing design, notably pioneered by Florence Nightingale. A casual observation of the title and browse through this book, particularly accompanied by the excellent images of domestic interiors of roof-lit low-rise housing, could suggest that good daylight and sunlight alone provide the answer to healthy homes. The sections on daylight sunlight and ventilation are supported by established technical data and therefore appear the most prescriptive guidelines, whereas other sections which are equally important, yet with less evidence available are more speculative. Importantly, however, in the overall text it is clear that daylight, sunlight and ventilation do not alone provide the contents or conclusions of the authors, which are more nuanced.

Healthy homes in cities with higher urban densities will need housing solutions for medium rise compact urban blocks with street scale and public realm. In this context daylight is one factor in many. A rush by developers to build high rise supported by ideologies which are incorrectly justified by need for light and air should be avoided and careful heed taken from errors in the past. Urban design must include healthcare challenges and lifestyle factors such as poor diet, insufficient exercise, loneliness and social integration which all relate very strongly to compact neighbourhood and street designs, balancing proximity and day-

topics such as access to nature, circadian rhythm, and air quality are dealt with here in an analytical way. Finally, in Part 3, we have attempted to illustrate the synthesis of these principles by means of 6 scenarios. These describe both new and refurbishment projects for residential buildings including single detached homes, refurbishment of high-rise 1960s tower, new student accommodation and a care home.

Even during the time-span of preparing this book, renewed concern has gathered pace on the old issues of carbon emissions and global warming. It seems that the human race faces an increasingly uncertain future at an ever-decreasing time scale. Guidance on the provision of healthy housing against the constraint of massive reductions in energy and resource use and increasing population density, has a vital role to play. ■

light criteria. SEE: Jan Gehl, *Cities for People* 2010 pp 41-43.

Changes in climate will also have a significant impact on homes. The book is mostly referenced with examples from UK & Northern Europe with relatively benign climates. Future uncertainties in climate will need more consideration, whether increased solar radiation and sky brightness requiring increased protection and shade, or increased precipitation, dull skies and protection from extreme climate events. These factors are included in the book, however without evidence available these influences are identified more speculatively, with less tangible design recommendations.

The authors acknowledge the reality of design for healthy living is complex, considering such a wide range of factors they conclude that at best current design solutions should acknowledge concepts of “safe territory” or “good enough design”. The book references scientific data and emphasises with each topic how evidence can be used to create principles for good design solutions, which are, however, often contradictory and require extensive weighing up. The last section of the book includes design scenarios which illustrate just how varied each design response will need to be, creating almost unique solutions. Architecture and urban design relies on an “adaptive opportunity” approach, based on data and feedback from occupiers over time, unlike product design which can be based on tested evidence and refined before use. This appropriate approach, which the authors refer to as “nudge architecture”, requires an open mind and lessons learned attitude, which builds on occupier feedback with scientific and sociological based evidence.

The book is an excellent reference and appropriate for an uncertain future where urbanisation and consideration of climate change requires continual design refinements to achieve healthy homes. ■

An excellent reference appropriate for an uncertain future says Gary Young

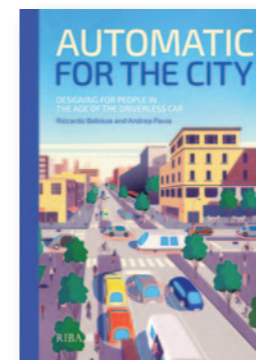
Gary Young, architect has collaborated with Sir Terry Farrell for 40 years on award winning, mixed use developments. Gary as director of Place 54 Architects has completed residential, retail and industrial masterplans



# Driverless cars and the (near) future of London and Los Angeles

Authors Riccardo Bobisse and Andrea Pavia introduce *Automatic for the City*

RIBA Books £45



Riccardo Bobisse is a practising urbanist and Andrea Pavia, AICP is an urban designer

Are our cities ready for the age of the driverless car? Riccardo Bobisse and Andrea Pavia have explored the potential implications of driverless cars on the built environment in the new RIBA title *Automatic for the City*

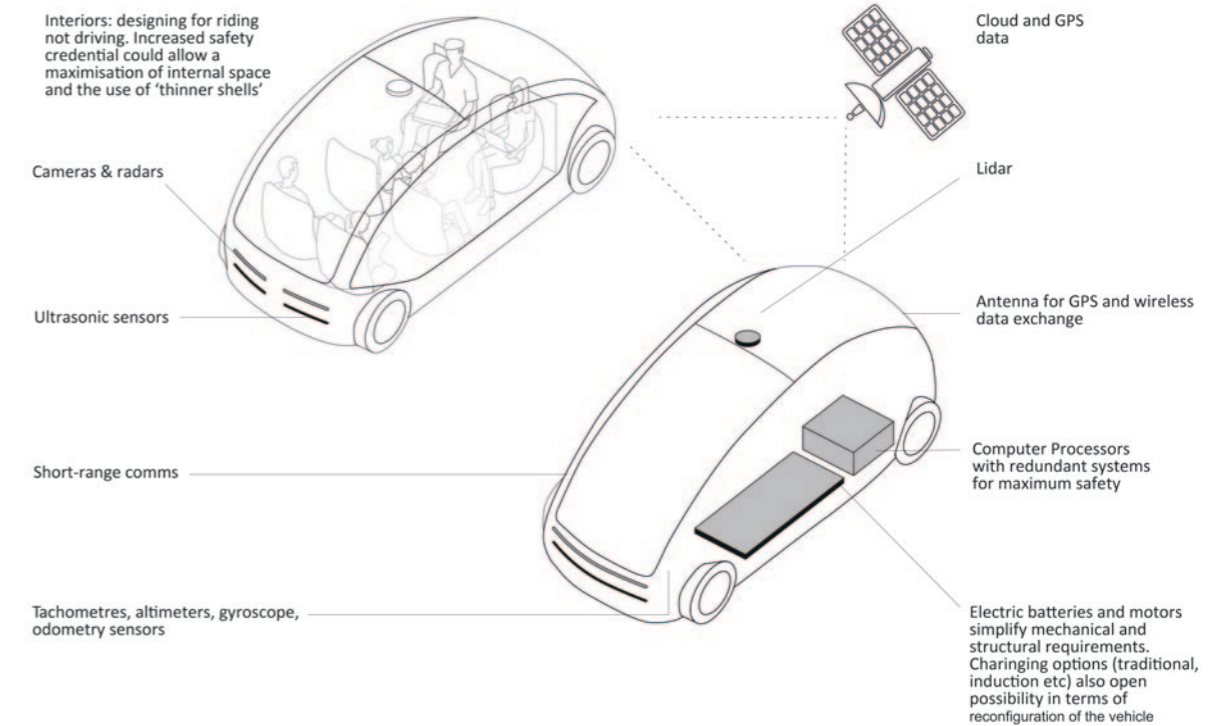
The metaphor of the city as human body has endured since the Renaissance, sustained by master designers and theorists, to give sense and structure to the city's different parts, their functions and interrelations. Using this metaphor, we can understand the city's mobility system like the human body's skeleton, providing support, movement, and regulation to the other parts, like muscles and organs. As technologies for urban mobility evolve, so does the body.

With the revolution of the private automobile after World War I, London and Los Angeles witnessed a rapid and unprecedented transformation that is still underway. The body mutated beyond recognition. Today we are on the verge of a similar revolution. Connected & Autonomous Vehicles (CAVs) linked through big data to a shared economy will become, according to the latest industry predictions, a reality in major urban areas within the next 10-15 years. Is the body going to mutate once again beyond recognition? And, if so, what is this going to look like? How will this mutation unfold? Will the metaphor altogether shift from the analogy to the human body to the analogy of the complexity of

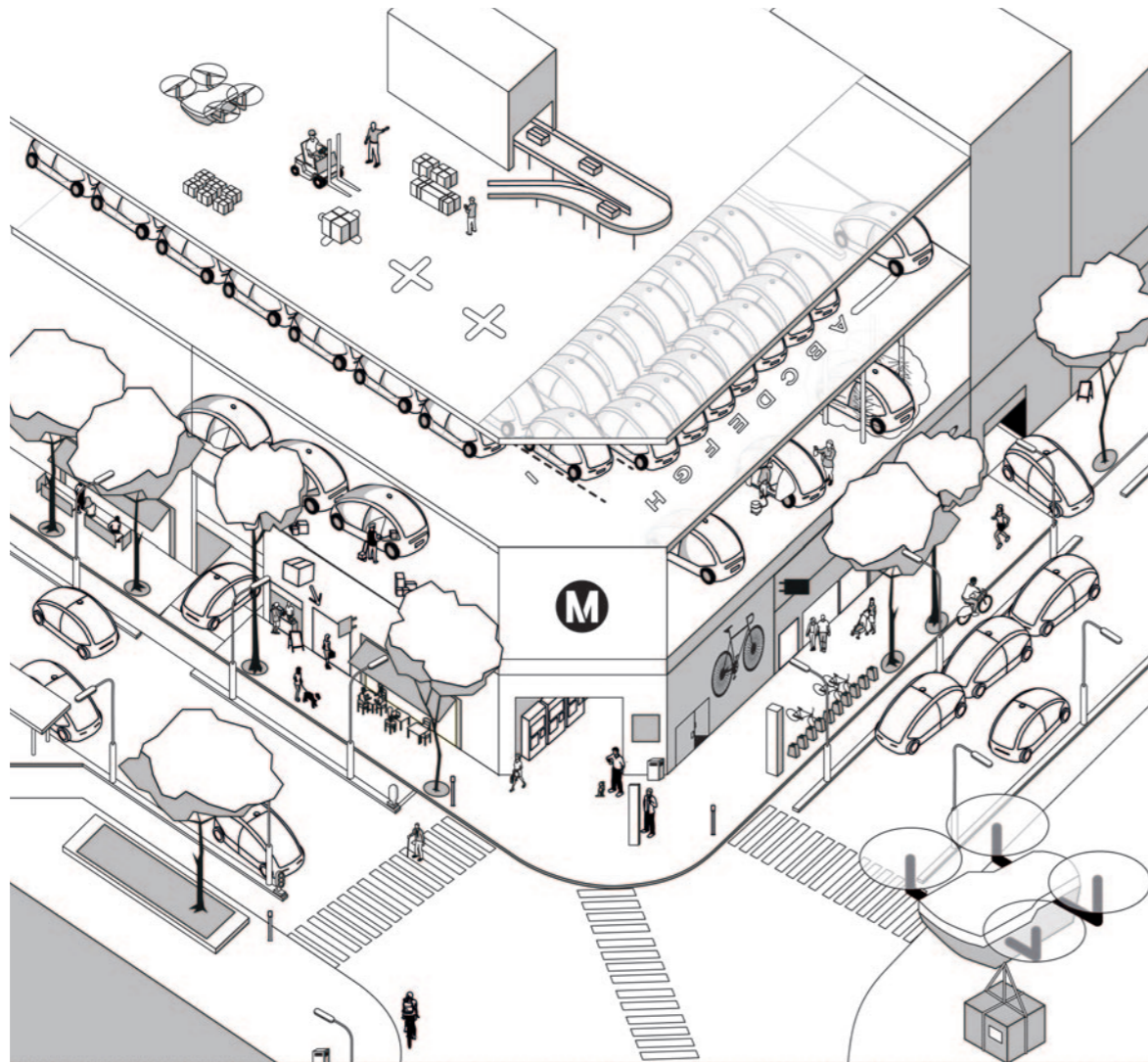
the human brain?

One of the much-presaged benefits of the CAVs revolution will be more efficient traffic operations leading to increased carrying-capacity of existing road infrastructure and less parking requirements, with the potential to reallocate road and parking space away from vehicles to other uses. With the ever-increasing levels of traffic congestion that urban areas are experiencing under the pressure of population growth, there will be a temptation to use the space 'gained' for more vehicles. In fact, over the last two decades the overwhelming majorities of cities have made modest progresses in addressing modernist mistakes of car-led city planning, in dismantling barriers that were created by making traffic efficiency the driving force, and in de-segregating uses. Even where private car trips have actually decreased, these have been replaced with more trips for deliveries and ride-hailing SEE <https://tinyurl.com/y7rlq73x>.

Still today only suggesting of removing or re-configuring urban highways (or at least some of them) is, as a minimum, controversial despite successful examples in many European and US cities. Healthy Streets and Liveable Neighbourhood (UK), Complete Streets and Vision zero (US) efforts have recently received fiery push-backs because of this car-led planning culture (see for instance recent cases in Tower Hamlets1. Even Millennials' chang >>>







Riccardo Bobisse is a practising urbanist based in London with 15 years of professional experience in Europe and overseas. He specialises in masterplanning with a specific focus on mixed-use urban schemes and town centre revitalisation strategies. Riccardo holds multiple academic degrees in urban design, planning and regeneration from Westminster University, University College London's Bartlett, and Venice University (IUAV) and has built his professional experience in both the public and private sector. He is also a design review panelist for Design Council/CABE.

Andrea Pavia, AICP is an urban designer with almost twenty years of professional experience in award-winning projects in the USA, Europe, China and the Middle East. Andrea's research focuses on the issues of ecology, energy and mobility as drivers in the design of urban frameworks and at the centrality of public spaces in city making. His projects and articles have been featured in *Urban Land*, *American Planning Association - Los Angeles* and in *PianoProgettoCitta'* among others. His essay on "Walking as a luxury activity" has been recently published by Routledge. Andrea graduated from the Harvard GSD and he has been adjunct instructor in urban design at the Boston Architectural College.

ing attitude towards car ownership is not affecting our passion for cars. As illustrated in a SEE <https://tinyurl.com/r3ggunr> in New York City alone, more than 620,000 daily trips are made by Uber and Lyft. Congestion is worsening, public transit ridership is dipping, and more vehicle-miles wearing down roads. When the drivers will be removed from the equation because of automation, the cost of ride-hailing services will decrease substantially and the service will become ubiquitous.

Urban planners should instead take the opportunity of the CAVs revolution to instigate a paradigm shift and break the cycle of motor vehicle dominance on our streets. We should champion the reallocation of any space away from motorized vehicles, to more productive/resilient uses, people and human-scale activities and finally break the perpetual circle of traffic-induced demand. It would be a great opportunity to use this 'extra space' to retrofit our cities in a more climate/context-conscious and sustainable way!

Furthermore, this change will trigger a number of complex questions which will not simply relate to the public realm but risk to profoundly change the way public and private organisations operate and ultimately how we, as citizen, relate to them. A good example is the revenue from parking which risks to evaporate and put further strain on public services (in the UK alone, Council's parking charges have reached £1 billion). There are also important infrastructural challenges: who could and should man-

age the network coordinating self-driving vehicles and the vehicles with the road infrastructure? How can we successfully integrate CAVs with the public transport system? Who will finance the infrastructure? Who will run it? How is possible to manage the transition period?

There are also going to be important changes in the real estate sphere, as the construction cost equations will change (will underground parking still be needed? Can service area footprints decrease? Is it possible to unlock sites in peripheral locations as a result of not needing parking spaces? Will low density (unsustainable) suburbia become attractive again and diminish the recent re-gained attractiveness of urban centres?

With the advent of CAVs, planners and stakeholders involved in city making will have this once-in-a-lifetime opportunity to re-consider how cities work. As planners and designers, we should welcome this leap forward. At the same time, we should value lessons learned from the mistakes of the last century and recognize that technology is a tool, not a means. Now is the time to formulate ideas and policies to drive this imminent mutation as we cannot afford to shape our cities to a new technology by creating (again) new infrastructural rigidities and hyper-dependence. ■

<sup>1</sup> SEE <https://tinyurl.com/u5lspdk> and *West Side stories* SEE <https://www.latimes.com/local/lanow/la-me-ln-bike-lane-backlash-20170623-story.html>