

BUILDING HAPPINESS

ARCHITECTURE TO MAKE YOU SMILE

B
U
I
L
D
F
U
T
U
R
E
S
I
N
G

Building Futures is the RIBA's think tank which was set up to promote debate on the future of the built environment and its socio-economic and environmental impact over the next 20 to 50 years. How and where will we be living when the climate has changed and cities are bigger than ever? What technologies will architects be using to design buildings and what new materials will they be specifying? How will the inevitable new technologies affect the buildings we all use every day?

A new science, the Economics of Happiness, has been looking at the factors that influence how happy we feel, from our economic prosperity to our democratic rights. For some time people have noticed that wealth=happiness is not the whole answer. For example, as long ago as 1972 the King of Bhutan stated that his country should measure the Gross National Happiness Quotient as well as GDP.

The Building Happiness project was started by Building Futures early in 2007, with the aim of discussing whether the way we design our built environment can have a direct bearing on how happy we feel. Can we construct happiness?

What components make for a happy building or space? How do we measure and quantify this response?

The book follows on from numerous consultative initiatives, including a public debate hosted in May 2007, with the aim of gathering public and informed opinion on the subject.

Should Happiness be a standard objective when we design our buildings and towns? Can it ever be a planning requirement?

We spoke to a number key thinker and practitioners to share their thoughts. Architects, artists, policy advisors, developers, engineers and health researchers have all contributed. In addition, we have asked people who use and inhabit our built environment to describe places which do indeed make them happy, including the journalist Kirsty Wark, the sculptor Antony Gormley, the architect Richard Rogers, and the Young Vic Theatre Director David Lan.

This book aims to provoke discussion amongst all those who inhabit, plan or design our built spaces, and to encourage the professionals to keep happiness at the centre of their work.

UK/£24.95 US/\$45.00
ISBN 978 1 906 155 46 9



architecture art design
fashion history photography
theory and things

www.blackdogonline.com

black dog
publishing
london uk

B
U
I
L
D
I
N
G
H
A
P
P
I
N
E
S
S

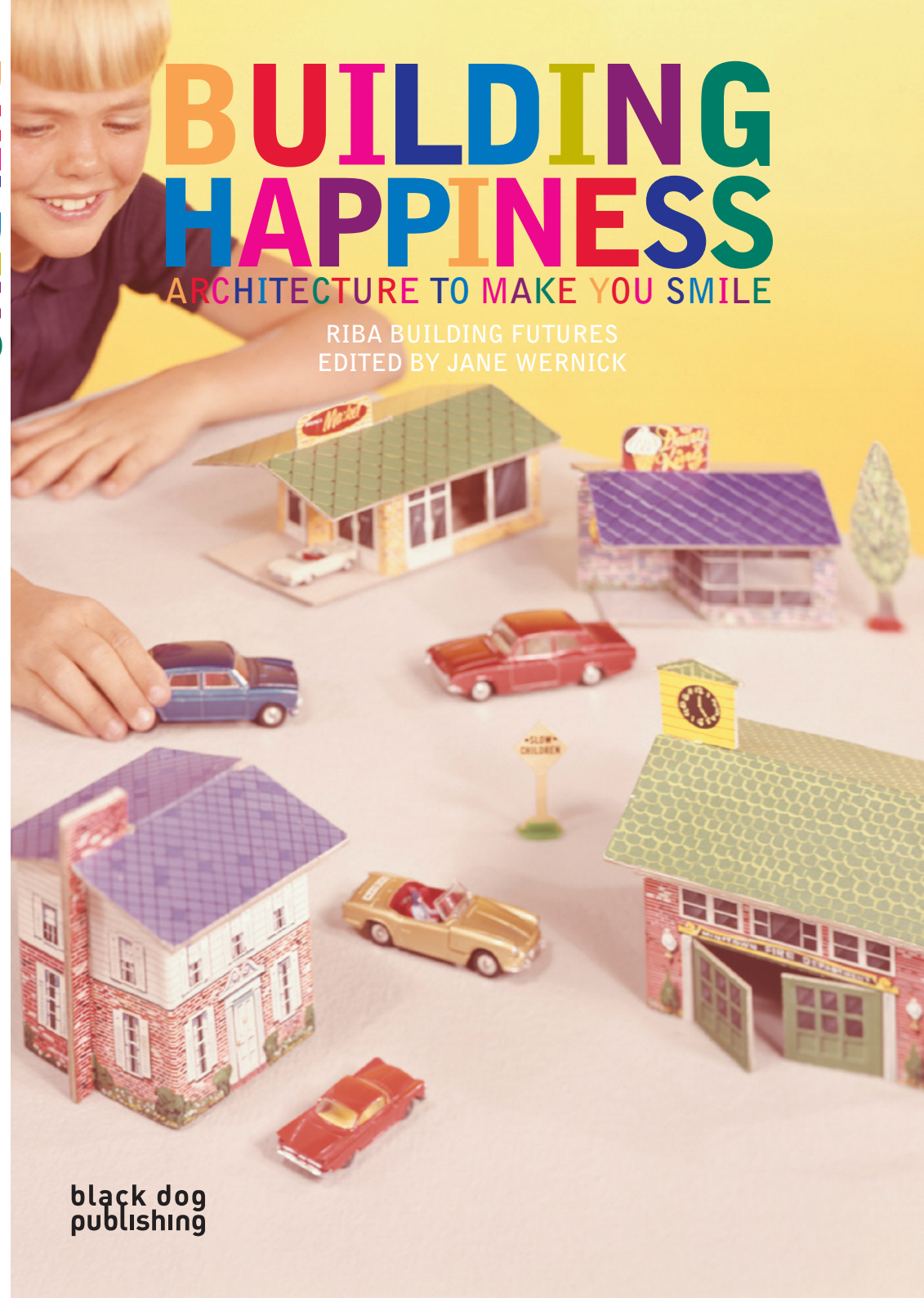
A
R
C
H
I
T
E
C
T
U
R
E
T
O
M
A
K
E
Y
O
U
S
M
I
L
E



BUILDING HAPPINESS

ARCHITECTURE TO MAKE YOU SMILE

RIBA BUILDING FUTURES
EDITED BY JANE WERNICK



black dog
publishing

BUILDING HAPPINESS

ARCHITECTURE TO MAKE YOU SMILE

EDITED BY JANE WERNICK
RIBA BUILDING FUTURES

black dog
publishing
london uk

CONTENTS

- 1 INTRODUCTION
JANE WERNICK
- 2 HA-HARCHITECTURE
LOUIS HELLMAN
- 3 THE HAPPINESS IN-BETWEEN
KEITH BRADLEY
- 4 THE GOOD LIFE
ROS DIAMOND AND SIMON HENLEY
- 5 PAUL SMITH'S HAPPY PLACE
- 6 IS HAPPINESS THE KEY TO UNLOCKING SUSTAINABILITY?
POORAN DESAI AND ED BLAKE
- 7 RICHARD ROGERS' HAPPY PLACE
- 8 THE ROLE OF COMFORT IN HAPPINESS
MAX FORDHAM
- 9 KIRSTY WARK'S HAPPY PLACE
- 10 AN EVIDENCE-BASED APPROACH TO BUILDING HAPPINESS
DAVID HALPERN
- 11 HUGH PEARMAN'S HAPPY PLACE
- 12 THE LOVE AFFAIR BETWEEN PSYCHOLOGY AND ARCHITECTURE
BYRON MIKELLIDES
- 13 WILL ALSOP'S HAPPY PLACE
- 14 SOCIAL AND PHYSICAL FACTORS FOR BUILDING HAPPINESS
SARAH TOY AND HILARY GUTE
- 15 ANTONY GORMLEY'S HAPPY PLACE
- 16 BUILDING FOR CLOUD 9
LORNA WALKER
- 17 A HAPPY AGE (BEFORE THE DAYS OF ARCHITECTS)
JEREMY TILL
- 18 ODILE DECQ'S HAPPY PLACE
- 19 HAPPINESS IN THE LANDSCAPE
MARTHA SCHWARTZ
- 20 DEYAN SUDJIC'S HAPPY PLACE
- 21 A CONVERSATION WITH RICHARD WENTWORTH
- 22 DAVID LAN'S HAPPY PLACE
- 23 CAN URBAN TOPOLOGIES PROMOTE HAPPINESS?
TAMSIE THOMSON
- 24 JANE WERNICK'S HAPPY PLACE
- 25 BIOGRAPHIES
- 25 ACKNOWLEDGEMENTS

INTRODUCTION

JANE WERNICK

Attaining a state of happiness has been seen as a goal since ancient times, and surely in today's conflicted world, we all yearn for inner peace and happiness? The Eastern definitions of happiness imply that it is a state that lies within us and cannot be provided by others. It is seen as a transcending state, because often we are at our happiest when we lose ourselves in some concentrated activity. Some people call that state "flow".¹

There are myriad things that can make us happy—when we feel loved, valued or nurtured; when we achieve something; when we have a good laugh with friends; when we enter a space that makes us smile. Perhaps in a simple way we can say that Happiness means feeling good, and enjoying life.

In the modern world happiness has been recognized as a worthwhile political goal—the US Declaration of Independence states that the pursuit of Happiness is a fundamental right, in 1972 the King of Bhutan stated that his country should measure the Gross National Happiness Quotient as well as their GDP. Andrew Oswald, Professor of Economics at Warwick University and others suggest that a Gross Happiness Level may come to replace GDP as a measure of any nation's wellbeing.

In the eighteenth century a number of thinkers, including Jeremy Bentham proposed that the aim of society should be to achieve the greatest happiness of the greatest number. This was interpreted by economists as "Happiness is the sum of good feelings minus bad; the pursuit of pleasure and the avoidance of pain". They even postulated a hedonimeter to measure the ups and downs of a man's feelings in the same way as a thermometer does.²

At the Royal Institute of British Architects (RIBA) there is a group called Building Futures which aims to promote discussion about the future of the built environment in say, 20 to 50 years' time. We have noticed that, in the field of economics, it has been found that increasing our wealth does not necessarily make us happier. A new science, the Economics of Happiness, has sprung up and we have found that although GDP, which measures our economic prosperity, has increased enormously since the 1950s, our happiness has not.

The economists Bruno Frey and Alois Stutzer have found that where there is a well developed democratic framework, coupled with a good degree of local democracy, people are more satisfied with their lives.³

It now also seems that we can accurately measure how happy we are. People who confess to feeling happy tend to grin more than others, and generally people can say quite accurately how they feel at a given moment, on a scale of, say, zero to ten. Researchers have found that people's self-reports tally pretty well with what electrodes planted on their scalp reveal about the frequency and voltage of electrical waves in their left forebrain, which is the area that lights up when they are feeling good. So some researchers claim that we can measure happiness quantitatively.⁴



What are the things that make us happy? A lot of what has been discovered is pretty much common sense:

- Those who are least happy are the divorced, and those in the lowest quarter of the income distribution.
- Women are more likely to be 'Very Happy', and also more likely to be 'Not too Happy'.
- Those who are unemployed are less likely to be 'Very Happy'.

I wanted to know whether architecture and the environment we build for ourselves can contribute to our happiness. Can it make us smile?

When I was asked by David Marks and Julia Barfield to collaborate with them on an idea they had for a competition for a landmark for the new millennium—the Millennium Wheel—their idea was to produce an observation wheel that would simply offer delight to those who chose to ride on it. Throughout the development of the design that we tendered, that was our primary concern. We wanted it to be an object of wonder. The fact that there are only tensioned cables that support the rim, and that the wheel is only supported from one side, means that you have to think hard about what makes it stand up. Modelled on the almost magical structure of the bicycle wheel, where all your weight is carried by steel spokes that are only three millimetre diameter, it looks almost transparent. Because the capsules are held on the outside of the rim using large cogwheels that are recessed into and hidden by the skin of their egglike form, you get no obstruction to your view. Great care was taken to choose optically excellent doubly curved glass, so that you can look down on the river Thames as it snakes its way through London and all of its landmarks.



Opposite Looking out from the Millennium Wheel.

Above Views from the capsule, unobstructed by the structure.

Below Social interaction in a capsule.

My spirits lift whenever I go on it, and hear the softly murmured exclamations around me, and see the smiling faces.

Of course architecture is about much more than providing a ride. And probably, just as the afterglow of a new pay rise soon fades, so such short term experiences are not enough. But I wondered if the way we design our towns and the specific buildings we inhabit could have a permanent effect on our psyche. Had anyone attempted to carry out systematic studies of how levels of depression were affected by aspects of their built environment?

At Building Futures we organised a seminar to which we invited people who had either been doing such research or who might be interested in that research. It became clear that there are many thinkers, researchers and practitioners who have been considering the topic. It could even be that developers and planners will start to consider happiness as a desirable objective, along with sustainability and social responsibility.

This book is a collection of essays by some of those people. It represents a wide range of opinions and approaches, and we hope that it may provide a stimulant for further debate, and perhaps more systematic research.

We start with the architect Keith Bradley who argues that it is the in-between spaces in our buildings that are needed for social interaction. The circulation spaces are not just a means of getting from A to B, with every extra spare square metre being seen as wasted money. He takes the example of schools, which foster communities and shows how these spaces can stimulate the interaction between pupils, and encourage feelings of belonging and happiness.

The architects Ros Diamond and Simon Henley also discuss issues of public space. Our streets and public spaces need life. But to be happy we also need to feel that we have control of our space and time. They remind us of the TV sitcom *The Good Life*, in which a couple convert their suburban garden' to self supporting agriculture, and the experiments of radical environmentalists and architects in New Mexico, in communities built on recycling and alternative energies. They also rail against the commercialisation of the public realm and those public buildings with deep section and expanded commercial facilities that are confused with the public ones.

Pooran Desai, director of BioRegional Quintain who developed the BedZED housing estate, and the One Planet Living Guide, argues that happiness is the key to unlocking sustainability. On the estate cars are kept to the minimum and there is a car club. The layout encourages walking and meetings between neighbours. He builds on the theme that it isn't just the architectural planning, but the social structure that helps to bring about happiness.

Jeremy Till, Dean of Architecture at the University of Westminster and author, puts the brakes on all this optimism by arguing that we shouldn't be naively optimistic about our new architecture, and that we must take care to be realistic. He takes issue with the assertion that there is a direct link between architecture and good mood, and also with the association of beauty to happiness as an inviolate truth. In some ways he goes back to theme of the others, that the key task of the architect is to contribute to special relationships that enable good social links to develop.

David Halpern, who has been a policy advisor and now heads the Institute for Government has been studying this subject



Above Queen's Walk and the new Royal Festival Hall terrace, Southbank, London.

for some time. He describes an evidence-based approach to building happiness. He describes studies that measure levels of depression and those factors that improve wellbeing such as the positive effects of looking at greenery, as well as environmental stressors such as sound levels and the importance of knowing where the sounds come from. He tells of studies into student accommodation and the terrible effects that long, blank corridors can have on a student's psyche. Where the layout allows for a cluster of rooms around the shared facilities the students have much more predictable and controllable interactions, and are much happier. He argues that we should build on the growing literature and data sources and life-satisfaction and use the information when we plan our developments.

Professor Byron Mikellides, at Oxford Brookes' School of Architecture has carried out a thorough review of the studies into architectural psychology and the analysis of the human factors of design over the last 35 years. i.e. those studies that have been explicitly concerned with making better and more humane environments. He says that architectural education must include developing an understanding of the relationship between people and buildings, buildings and the environment, and the need to relate buildings and the space between them to human needs and scale.

Max Fordham, the renowned services engineer, takes a good look at the issue of human comfort. He asks if our demands for comfort are too greedy. We have managed to evolve as a species so successfully that we are in danger of overloading our environment and then going into decline or extinction. He takes as a given that it is through our senses that we experience our surroundings, and in particular he examines how we are affected by noise, light, temperature and smell.

He describes in very precise terms how our senses are affected by our surroundings, and how they in turn affect our mood or sense of wellbeing.

Dr Hilary Guite and Sarah Toy describe a serious action-research project being piloted in the London Borough of Greenwich. Dr Guite spent four years collecting baseline evidence on links between the physical and social environment. They are now moving to the to the implementation phase where small changes are being made to the housing estates, as a result of their research. They argue that subjective wellbeing combines with psychological and social wellbeing, and their research will show that aesthetics, form and function do have a relationship to mental wellbeing.

The environmental scientist, Lorna Walker reminds us that we need our built places to make us feel safe, and to foster friendship and communities.

The landscape artist Martha Schwartz believes that memory, associations, and connections all have a large part to play in how we feel about places. For example, the Grand Canyon can give you a great thrill, but for her the family garden will always win in her mind as a happy place.

The conversation that Ed Blake and I had with Richard Wentworth was based on a walk that he led in Camden. His conversation touched on many issues that contribute to how we feel about our cities. He talked about coincidence and recognition; about the pavement and shared space; of ownership of space; about the ubiquitous brick; of Modernism and old things and comfort; and the need for community. It was interesting to me that so many of these are recurring themes in the other essays.

Tamsie Thomson has written an essay that offers a review of work that philosophers, architects, researchers and sociologists have been doing for hundreds of years in an attempt to discover how the urban environment affects our psyche. She includes a bibliography that shows the breadth of thinking on this topic, and that should give us the stimulation to continue to take the subject of building happiness seriously.

Throughout the book we have included a number of short pieces by people who care about the built environment, who we asked to write about a work of architecture that makes them smile. The ways in which they have chosen to respond to our request demonstrate how elusive this discussion can be. But throughout the whole collection of essays and short pieces we find the recurring theme—we don't like places that make us feel alienated and out of control. The best places are those which let us feel we are control, and that allow for good social interaction and the opportunity to be at one with nature.

NOTES

- 1 Csikszentmihályi, Mihály, *Flow: The Psychology of Optimal Experience*, New York: Harper and Row, 1990.
- 2 Edgeworth, Francis, *Mathematical Psychics: An Essay on the Application of Mathematics to the Moral Sciences*, New York: Augustus M Kelly, 1881 (1961).
- 3 Frey, Bruno S and Alois Stutzer, *Happiness and Economics: How the Economy and Institutions Affect Human Well-Being*, Princeton Paperbacks, 2001.
- 4 Layard, Richard, *Happiness Lessons from a New Science*, Harmondsworth: Penguin Press, 2005.

THE ROLE OF COMFORT IN HAPPINESS

MAX FORDHAM

In order to relate happiness to my professional skill as an environmental engineer I am going to define it as “a state of mind which has developed through evolution to encourage us to behave in ways which ensure our survival”.

Clearly this includes social behaviour, but here I am going to consider the issues that concern environmental engineers. *The Objectives of the Institution of Heating and Ventilation Engineers* states that they strive for the “greater comfort and happiness of mankind”.

One of the problems that faces us is that we have managed to evolve as a species so successfully that we are now in danger of overloading our environment. This could well mean that we end up going into decline or extinction.

So, happiness needs to be refined in order that our demands on the environment for comfort are not so greedy. Over the last century requirements for environmental standards have become divorced from our subjective response to the physical sensations of the environment. For example, we set standards for an optimum temperature range that our offices should be kept at, whereas there could well be circumstances in which the design of those offices means that we would be equally, or perhaps be more comfortable at temperatures outside that range—e.g. if we can open our windows. We should return to an understanding of happiness and the joy that comes from feeling a wide range of natural conditions.



Above Fun outside in the cold weather.

We experience our surroundings through our senses. The feedback we get from our senses give us the information to confirm that we are vibrant and alive. Our sensory responses let us know if we are comfortable, and thus affect our happiness.

Any striving for happiness should avoid our bodies being subjected to stress. In some circumstances our ambitions can exceed our ability to be comfortable, in which case perhaps we should adopt a less ambitious lifestyle. For example, if we sleep when it is dark, and relax when it is very hot at mid-day we can reduce our demands on the environment. Whereas if we aspire to keep active for most of the time in those circumstances we will end up either too hot, or requiring more artificial cooling.

The ideas in this essay were inspired by the sort of research which is covered by Richard Layard's book, in which he describes how we can now accept that we can indeed measure levels of happiness.¹

In this essay I would like to offer my thoughts on some of the key environmental conditions with which I concern myself in my professional life. These are:

SMELL
NOISE
LIGHT
TEMPERATURE.

SMELL

I will take it as a given that smells can affect how we feel about a place. Smells are often linked to particular memories, and so the smell of a wood fire, or even that of coal smoke gives me a warm nostalgic feeling. In a house the smell of cooking brings back feelings of support and succour. Shopping centres deliberately use baking smells to make us relax and therefore buy more. Of course, this would not necessarily make us happy. The whole idea of perfume is based on the idea that there are some smells which improve our feeling of wellbeing/happiness.

Smell is the most important parameter for defining how much ventilation is required for a building. The need to dilute smelly pollution by bringing in outside air demands more ventilation than would be needed just to provide oxygen

for us to breathe. It also demands more ventilation than is required to clear the carbon dioxide we exhale.

The scientific approach concentrates on smell as a sign of pollution and has led to requirements for ventilation to control the odour. To date the relation of smell to happiness has not been a serious research topic. The current design approach is that smells are objectionable and a rate of ventilation is needed so that odour is not detectable. A person who comes into a room will immediately detect any smell, but after, say, quarter of an hour of being in the room they no longer detect it. A technique for measuring the amount of smell given off by people, processes, and building materials has been developed. This technique has started to be used, and has produced a notional ventilation requirement for buildings. A database of smell emissions is now needed so that the amount of ventilation can be judged in conjunction with the expected smell emission.

The current standards involve bringing in fresh air and then heating it to the room temperature, which consumes heat energy. Rather than restricting ventilation to save heat however, we can recover heat from the smelly outgoing air in order to preheat fresh incoming air.

In order to set proper standards for ventilation, the subjective sense of smell needs to be researched further so that we can better understand how much control is required.

NOISE

Noise, or sound, is important because it is one of our main means of communication. Many sounds, including music, can lead to an emotional response, and often one of happiness. Many people find music to be therapeutic to some degree.

When we design buildings we need to consider their acoustic properties. To do this we have to understand how the hearing mind works. The ear is very sensitive and can hear very quiet sounds from the sound of normal breathing at about 10dB up to sounds with 10 billion times more energy i.e. 100 dB-10¹⁰ (the maximum allowed in a public place). If we were conscious of all the sounds coming to the ear we would be in a complete tower of Babel and would be made very unhappy by the confusion. So the brain filters out the general field of confused noise, and we perceive only the loudest intermittent ones as sound. The background sound during a still night in

an isolated country place is thousands of times more subdued than in a quiet suburban street at night. All the criteria for noise disturbance have to be adjusted to differentiate between night and day, and country or city.

Now that very loud sounds can easily be produced electronically with little effort, noise nuisance from neighbours is one of our common complaints. Currently the industrial approach to sound level requirements ignores the variable sensitivity. It is too restrictive in urban surroundings, and allows too much intrusion in the quiet country.

LIGHT

Light, like sound, also helps us to communicate with other people, and to experience our surroundings. Again, in order to design our spaces, we need to understand how the seeing mind works. We have evolved to be active mostly during the day. So, our ability to see in the dark is not so well developed as in some animals. The eye, like the ear, has a phenomenal range of sensitivity. The sun is 100 billion times brighter than the Pole Star and if we look straight at it our eyes will be damaged.² Also, the eye cannot encompass the full range of its sensitivity at the same time. It takes some moments to adapt to the general brightness of the field of vision.

A modern art gallery needs to have fairly low light levels so that the works of art are not damaged. A typical light level would be 50 lux. The eye can adapt to a halving of the light level in about three seconds. So, in going from a bright sunlit day (100,000 lux) the light halves 11 times which will take about 33 seconds. You need both distance and time to be able to go from bright sunlight to the sort of conditions of a conservation art gallery. Incidentally, these levels are about the same as our expectations for a traditional house.

We, who live in Northern Europe, are made happy by the warmth and brightness of a sunny day, just as we enjoy the feelings after having a feast, but this does not mean that we need to feast on this luxury all the time. Bright light helps the body to produce serotonin, which is thought to lift depression and aid happiness. On the other hand, people who are used to the strong bright sun associated with uncomfortably high temperatures seem to choose shady environments for preference.

Unfortunately, there does not seem to have been much research, and the whole issue of designing good natural light to give a happy subjective experience seems to be in abeyance. We concentrate on brightness, but we don't have a consensus of opinion about the importance of the distribution of light and the impact of brightly coloured objects.

Modern technology has enabled us to make brightly lit interiors. So that the contrast between the interior of an office and the sky outside can almost be tolerated in the time it takes to turn away from our work and glance up at a bright window. In our modern buildings we have tended to specify bright lighting with the attendant use of carbon fuel. Does this really make us happy? Could we not instead design buildings with good natural light and provide effective shading to deal with the contrasting brightness



Above Light and shade in a market in Marrakesh.

that occurs on an overcast day when the sun suddenly comes out? Surely we can remember buildings that achieve this which make us happy.

TEMPERATURE

I want to try to describe temperature conditions so that the feelings can be imagined rather than relying on the reading of an instrument.

As warm-blooded animals we have evolved to consume fuel and absorb oxygen to keep our muscles and brains working efficiently. We need to maintain a stable blood temperature. Otherwise we feel unwell. We have many involuntary mechanisms to maintain this constant temperature.

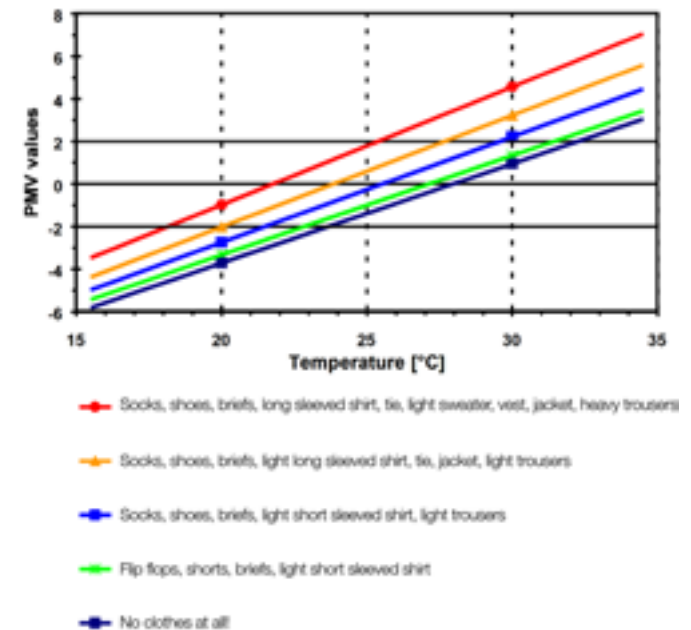
First, the flow of heat to the skin can be adjusted by controlling the capillary blood vessels near the skin. The skin is at a temperature somewhere between blood temperature and the temperature of the surroundings. If the skin is warm and the surroundings are cold we may lose too much heat. Then the blood flow to the skin is reduced so that the skin gets colder and we reduce the heat loss. If the surroundings are comfortable, the skin temperature feels alright. As the surroundings get colder we experience the skin as cold and feel uncomfortable.

If the air temperature is warm the body may have difficulty losing heat and the blood supply to the skin is increased. The skin cannot get hotter than the blood so 37 degrees Celsius is the hottest possible. If the air temperature is higher than this the skin becomes wet so that heat is lost by evaporation. Some animals, e.g. camels can allow the body temperature to rise to 40s of degrees Celsius, but we need protection in such a climate.

The perception of comfortable conditions depends on the climate we live in. In hot climates people are likely to be happy with a fairly warm and possibly even moist skin. Those who live in cold climates expect the skin to feel dry and for the skin to be at about 35 degrees Celsius.

Secondly, recent research shows that people are more comfortable, and happy, when they can make adjustments in response to varying conditions.³ We can adjust the heat lost from the skin by covering a chosen area of it with clothes. We can adjust the thickness and insulation value of the

clothes. If the temperature is low and the blood to the skin is being restricted we may feel cold all over. We then put on more heavy clothes. The protected areas of skin then heat up. With warmer skin the heat loss reduces and the body begins to overheat. The blood supply is increased everywhere, including exposed areas like fingers which warm up and feel more comfortable. Exercise increases the amount of heat being produced, and needing to be rejected by the body. So it is a way to make us feel warmer and need fewer clothes. Just as we enjoy making physical movements as exercise for our muscles, so we can also experience pleasure by making adjustments for temperature. If our fingers feel cold we can get the body to increase the supply of warm blood to them by putting on a warm coat or even adding a jersey. When the conditions warm up we are pleased that hot weather has come at last and enjoy wearing light summer clothes. This is all explained by modern science. (See Figure 1.)



This chart has been modified to show how people can adjust by changing their clothes. We need a social understanding so that people can be happy in winter with suitable fashionable clothes.⁴

The current engineering consensus, which has been reached by asking people whether they are "too hot" or "too cold", has arrived at a very narrow definition of a comfortable temperature. It does not allow for people making their own

adjustments as small variations of temperature occur. This not only means that we use more carbon fuel, but also seems to lead to complaints by the occupants of the buildings, who feel they have no control.

To maintain a stable blood temperature we have to be able to reject as much heat as we generate internally. When we are standing in the strong sun we get a wonderful feeling of a warm skin, but the heat we are receiving also needs to be lost from our shady side. The radiation heat exchange is part of the happy experience.

Another mechanism for controlling our temperature is by means of air-flow over the skin. When the environment is generally comfortable, blood is directed to the skin and is close to blood temperature. Then a breeze removes heat, but the skin is being kept warm by the blood flow. If we are feeling a bit cold the blood to the skin is being a bit restricted. In that case a local breeze will remove heat and cause the skin to cool down. We experience that as a draft. Not a happy experience! If we are in a warm environment the blood is directed to the skin and tries to warm it up to blood temperature. We feel flushed and hot. Then a breeze, if it is strong enough, can be a cooling refreshing experience.

We need to calibrate what a breeze means. When I walk I hardly notice the air movement. That is about one metre per second and represents more than any trickle vent or mechanical ventilation system could produce. I bicycle at ten kilometres per hour, or three metres per second, which makes a real cooling feeling. It is nice in a hot summer, and it generates a need for warm clothes in winter. In a room, three metres per second is needed to be able to enjoy a hot summer day. To achieve this requires a really large open window area—at least one square metre of ventilation for one person.

Research carried out in Northern Europe tends to relate to people who expect their skin to be dry, so that the exchange of heat by evaporation of water/sweat is not considered important. Anyone who has compared the environment in Saudi Arabia with say Singapore realises how much difference the heat exchange by evaporation makes. I find it difficult, as a European, to imagine what either of these two hot climates are like. Normally, I know that I am not happy to be exposed outside on a cold winter day. But a combination of good clothes and vigorous exercise can be good at very low temperatures. I have certainly been very

happy skiing at temperatures well below freezing. Coming out of the sea in a very hot climate is also a good feeling. And walking in the Empty Quarter of Saudi Arabia is quite likely to kill a European whereas a local Arab may survive.

It is possible to set up calculations to predict how people can survive in different environments, but it is much more difficult to know when people will be happy in those environments.

Modern research on thermal comfort certainly correlates comfort with climate so that people in warm climates expect a warmer environment than those used to cold weather.⁵

The point about this discussion is that we need to recalibrate temperature conditions in terms of happiness, because the modern consensus is that just using mechanical systems and energy to provide a standard set of conditions is not appropriate or sustainable.

INDUSTRIALISATION AND HAPPINESS

CONCLUSION

The Western industrial consensus is that increased wealth improves the human lot. In the environmental field wealth and energy enable us to remove the extremes of the environment in buildings, so that we are not forced to experience conditions that might represent a threat to our existence. However, we then aim to optimise the conditions to a very narrow range of parameters so that the amount of resources used is increased, and any chance for variety or contrast is lost.

The specification of environmental standards should be considered more in the light of happiness than in the interests of wealth producing productivity.

NOTES

- | | |
|--|--|
| 1 Layard, Richard, <i>Happiness</i> , Harmondsworth: Penguin Books, 2007. | ASHRAE Transactions, Vol. 104, 1998, pp. 991–1004. |
| 2 Rodieck, RW, <i>The First Steps in Seeing</i> , Sinaur Associates, 1998, p. 70. | 4 Fordham, Max, "Natural Ventilation", <i>Renewable Energy</i> , 19, 1999, pp. 17–37. |
| 3 Humphreys, Mike and Fergus Nichol, "Understanding the Approach to Thermal Comfort", | 5 Humphries, "Understanding" |

ACKNOWLEDGEMENTS

This book would not have happened without the RIBA Building Futures group. It is chaired by Dickon Robinson. A past Director of the Peabody Trust, and a CABE Commissioner for many years, he continues to advise on many aspects of architecture, urbanism, sustainability and regeneration. In his role of Chairman he has given continuous, generous and critical advice throughout this project. Building Futures is managed at the RIBA by Tamsie Thomson, who believed in the significance of the Happiness project from its beginning in early 2007. She has done an amazing job in organising the seminars and debates, and in making it possible for this book to be realised. She has been tirelessly assisted by Ed Blake who has been undertaking research, tracking down photographs, providing editorial assistance and generally helping in his role as Project Coordinator.

The Building Futures Steering Group whose members include architects, academics, developers, researchers and engineers, has proved to be a fantastic source of encouragement, contacts and ideas.

I have been privileged to work with all the contributors. The range of conversations we have had prove that this is a topic that will provide food for thought for many years to come. It has been a great subject to discuss because it is almost impossible to do so without smiling.

Finally, I must thank my office for accepting, uncomplainingly, the time that the Happiness project has taken from the practice.

To find out more about the work of Building Futures please visit www.buildingfutures.org.uk

Images used by kind permission of Amos Goldreich, Antony Gormley, BBC, Bioregional, Drax Power Ltd, Getty Images, HBG Construction, Jane Wernick, Jeremy Till, Jose Lasheras, Martha Schwartz, Louis Hellman, Odile Decq, Peter Cook, Philip Vile, Pooran Desai, RIBApix, Richard Bloomfield, Richard Wentworth, Simon Doling, Tim Soar, Will Alsop and Yutaka Saito.

P 8-9,12-13 All images courtesy Jane Wernick Associates.
P 22 Image courtesy Jane Wernick Associates.
P 23 Above Image courtesy Oundle School.

P 23 Below Image courtesy Tim Soar.
P 24-29 Images courtesy Peter Cook, Jose Casheras, Amos Goldreich.
P 25 ????
P 32-33 Image copyright BBC.
P 36-37 Image courtesy O'Donnell+Toumey
P 42-43 Image courtesy Yutaka Saito.
P 45 Image: Ed Blake, reproduced from *Cities for a Small Planet*.
P 47 Image courtesy Pooran Desai.
P 54-55 Image courtesy Richard Bloomfield, Flint Photos.
P 57 Image: Harold M Lambert. Image courtesy of Hulton Archive, Getty.
P 61 Image: David Sutherland. Image courtesy Photographer's Choice, Getty.
P 68-69 Image: Alastair Hunter. Image courtesy RIBA Library Photographs Collection.
P 78-79 Images: Ed Blake.
P 84-85 Image courtesy Drax Power Ltd.
P 88-89,92-93 Image: Bill Toomey. Image courtesy RIBA Library Photographs Collection.
P 100-101 Image courtesy Will Alsop
P 104 Images: Ed Blake, reproduced from Guite and Toy.
P 108 Image: Ed Blake. Reproduced from Guite and Toy.
114-115 Image courtesy Richard Bryant, Arcade.
115 Image courtesy Matt Gray, Digital Vision, Getty.
124-125 Image courtesy Jeremy Till
130 Image: ODBC.
142-143 Image courtesy Ken Reed, Stone and Getty.
146-147 Images courtesy Richard Wentworth.
154-155 Images courtesy Philip Vile.
158-159 Image courtesy Emmrich-Webb, Stone and Getty.
162-163 Image courtesy Richard Kolker, Photographer's Choice, Getty.
168-169 Images courtesy Jane Wernick Associates.
Other Building Futures publications include
The Building Futures Game: Developing Shared Visions for Neighbourhoods
Living with Water: Visions of a Flooded Future
Housing Futures 2024: A Provocative Look at Future Trends in Housing
21st Century Schools: Learning Environments for the Future
21st Century Libraries: Changing Forms, Changing Futures
The Professional Choice: The Future of Built Environment Professions