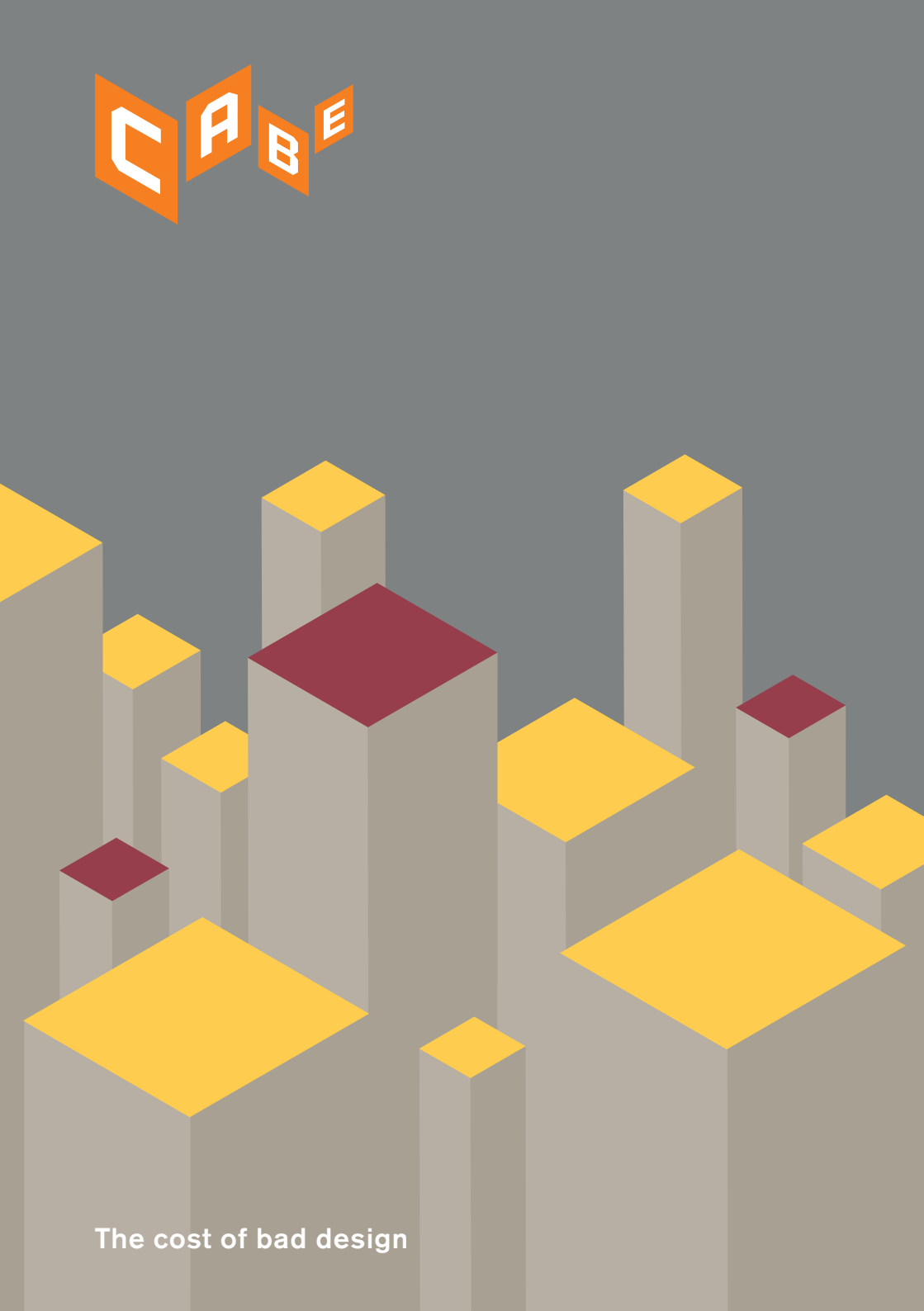


# The cost of bad design

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CABE is the government's advisor on architecture, urban design and public space. As a public body, we encourage policymakers to create places that work for people. We help local planners apply national design policy and offer expert advice to developers and architects. We show public sector clients how to commission buildings that meet the needs of their users. And we seek to inspire the public to demand more from their buildings and spaces. Advising, influencing and inspiring, we work to create well-designed, welcoming places.

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John Sorrell

# Introduction

At CABE, we think positively. We showcase good design, highlighting the best homes, public buildings and green spaces. But unfortunately, the world in which we work means we can't always accentuate the positive. We're here to make things better. We have a job to do because of the poor design and bad buildings that surround us – houses where no-one wants to live, hospitals that make patients ill, and parks that people avoid at all costs.

The fact is, everyone can think of a building they hate, a street that really depresses them, or a place where they'd call in the bulldozers. People don't need to be told when the built environment around them isn't working – they already know.

These essays highlight what really happens when buildings and spaces go wrong.

Too often, the people who design and construct buildings and parks don't worry about whether they will work properly or what will they cost to run. Once the project is complete, they can move on to the next job. But the public has to live with badly built, poorly designed buildings and spaces; and taxpayers often have to foot the bill for putting them right again.

This short-term thinking is costing us millions of pounds every year. So what can be done to change the way we invest in our built environment, to make sure we pay more attention to the long-term value and benefits of well-designed buildings?

We are pressing for changes from government that will make a real difference on the ground:

**Condemned: Chingford Hall Estate, Waltham Forest**

**- Offer leadership.** The Treasury should ensure that *The green book*, the government's guide to value for money, requires long-term thinking on design quality. As well as recognising the value of good design, the economic appraisal process must take account of the whole-life costs of a building project. It must acknowledge the potential risks of higher long-term costs and poorer performance from buildings and places that are badly designed. As a major landowner and a client for public buildings, the government should take a stand by refusing to carry on paying for other people's mistakes. Local authorities also need to take a stand against adopting poorly designed streets and public spaces. They can do much to reduce risk by demanding good design and rejecting bad.

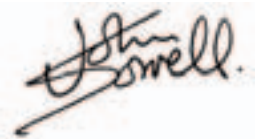
**- Aim high.** There is now a mandatory requirement for every new public building to meet the common minimum standards set down by the Office of Government Commerce. These are the minimum procurement standards expected from all public construction projects. They explicitly state that building projects must be selected on the basis of whole life value for money, not just capital cost. This leaves no room for excuses on poor design standards, and gives every incentive for public projects to match the standards set by the best buildings in the country.

**- Find out whether it works.** Post-occupancy surveys are not a luxury: they are a fundamental element of any well-run building project. The fact that they are rarely done explains the lack of genuine user insight behind so many developments. CABE believes that every school and healthcare building should be subject to mandatory post-occupancy analysis, at regular intervals after handover. This is the best and most reliable way to find

out whether places really work, and to learn lessons for the future.

**- Tackle the issues in PPP.** A vast amount of public infrastructure is being built right now using public private partnerships (PPP). To date, 463 PPP projects have been signed off with a capital value of over £47 billion. On average, five schools will be refurbished or rebuilt every week for the next 13 years. PPP has many advantages, but there are major issues that need to be addressed. There ought to be an incentive for PPP providers to invest in good-quality design because they will benefit from lower whole-life costs. The industry is only just waking up to this, and we still see too many projects where quality has been sacrificed for short-term savings. Above all, we must embed in every procurement process a direct link between access to finance and satisfactory design proposals. In essence, if the design is not good enough, the project should be stopped until real improvements have been made.

*The cost of bad design* is a clarion call. There is no excuse for bad design, and no reason to accept poor standards, yet exemplary buildings remain the exception. The buildings and spaces being constructed now will shape the way our towns and cities function over the next 50 years. We must ensure we create a legacy in the next 10 years of which we can be proud.



John Sorrell CBE
Chair, CABE

Dr Richard Simmons

# The cost of bad design

CABE and others have worked hard to establish that good design adds value to public and private sector projects alike.

However, many decision makers still fail to get the point. Valuation and accounting methods often give low priority to design quality as a generator of value for business and the case for good design has to be made over and over again.

But are we forgetting the other side of the coin? What are the costs of bad design? What happens when places and buildings ignore character, continuity, legibility and all the other principles that underpin good design?

Badly designed places impose costs on their occupiers, their neighbours and on society. A key reason why these costs are often not taken into account is that they are not paid by the people that make the decisions but by the wider community.

Two examples illustrate the potential costs. A 1970s housing estate at Holly Street in Dalston, east London, was so badly designed that it had to be demolished and rebuilt only 20 years into its intended 60-year design life, at a cost of £92 million. Meanwhile, George's Park in Lozells, Birmingham was laid out in the 1970s in a design that encouraged crime and anti-social behaviour and made it into a place actively avoided by local residents. It was redeveloped at a cost of £1.2 million.

These examples illustrate the need for a methodology to predict and measure the costs of bad design. This would alert decision makers to the real dangers and the financial risks that poor design poses.

**Big bang: demolition of tower blocks, Holly Street**

When I became CABE's chief executive in September 2004, the organisation had already done a lot of research into the value of good design and we had more on the stocks. There is now a powerful body of evidence that good design has financial and social value. Well-designed buildings and public spaces increase the value of physical capital and help to build social capital.

**'We let a lot of people off the hook if we don't talk about the cost of bad design'**

CABE is still at the forefront in gathering evidence about the value of good design. I welcome that but I think we let a lot of people off the hook if we don't talk about the other side of the argument – the cost of bad design. As the leader of a body with a mission to improve the

**Downward spiral: graffiti and vandalism drag an area down**

quality of people's lives by improving design quality I obviously want us to convince people about the positive case for good design. But as a taxpayer I see things differently.

**'What angers me is the sheer waste of public money that results from bad design'**

When I think about the use of my hard-earned taxes what angers me is the sheer waste of public money that results from bad design. Bad design is the result of bad decision making. There isn't any excuse for it. Politicians, officials, private developers and designers all have access to good information about how to build well-designed places. Too often they just don't do it. That usually imposes costs on all of us, whether the fault lies with a public or a private client.

At CABE, we know it isn't always easy. Good design does require creativity as well as good process. We know that good design is possible because we can see the results when it works well. We know that many organisations can produce it. Yet we continue to see badly laid out housing estates, hospitals that aren't fit for purpose, schools that aren't inspiring and public spaces that are green deserts.

This poor decision-making is at best ill-informed, and at worst irresponsible. It is inefficient, unnecessary and it can be stopped. That requires both political will and a well-managed approach to design, procurement and delivery. The best design leaves a legacy that will benefit our children. The worst leaves a burden that costs them dear. Things are getting better but improvement is not consistent. At the moment there is still the risk that we will build too much that is poor, and

not enough for which both current users and future generations will be thankful.

Decision makers often start by assuming that good architecture and urban design are a matter of personal taste and style. Once we have disabused them of that false notion, their next line of defence is that it adds too much to the cost of development. They assume good design doesn't add enough value to justify any additional costs it might bring with it.

**'We continue to see badly laid out housing estates, hospitals that aren't fit for purpose, schools that aren't inspiring and public spaces that are green deserts'**

People with many different interests seem to hold these beliefs in common: developers and valuers in the private sector who need to make a profit; public officials charged with keeping costs to a minimum and maximising what public money will buy; designers anxious to please a parsimonious client; and planning committee members who don't understand that they shouldn't settle for second best. All have different ways of looking at value and returns on investment. Many seem to think good design is an add-on they can afford to do without if doing so increases returns or output, or if it speeds up decision making. Then we poor taxpayers end up paying the costs that this misguided way of looking at design impose on us down the line.

First let's dispel the myth that we don't know enough about whether or not good design adds value. CABE has been closely involved in many studies on this.[1] In 2001 we published *The value of urban design* with University College London and the then Department

1. *The value of good design – how buildings and spaces create economic and social value*, CABE 2002; *The value of housing design and layout,* CABE/Design For Homes 2003; *The value of public space – how high quality parks and public spaces create economic, social and environmental value,* CABE 2004; *The value of urban design,* Ministry for the Environment, New Zealand 2005; *Be valuable, Constructing Excellence 2006*

**Wall to wall: a lack of natural surveillance can encourage crime**



of Environment Transport and the Regions. Since then a steady stream of research has tackled the question of value added from a variety of angles to take account of the perspectives of different decision makers. These include, notably, Sebastian Macmillan's *Designing better buildings*[2] in 2004 and, most recently, the New Zealand Ministry for the Environment's *The value of urban design* and Be/Constructing Excellence's *Be valuable* in 2005.

**'Let's dispel the myth that we don't know enough about whether or not good design adds value'**

These publications present an overwhelming set of arguments to justify the hypothesis that good design sometimes (but not always) costs more initially, but that it adds value. It can often create value in locations where quality has not been the norm. It certainly reduces whole-life costs.

2. S.Macmillan (ed), *Designing better buildings*, Spon Press London, 2004

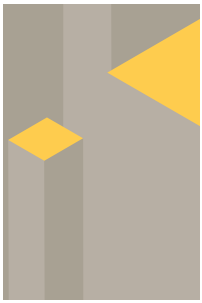
In spite of this literature CABE, and its partners in the public and private sectors, still have to justify the need for good design as a creator and adder of value. Some decision makers have got the point; many important ones haven't. Why is this? One issue is that valuation and accounting methods often give low priority to design quality as a generator of value to business[3]. I have already mentioned that many people also still perceive design to be about taste rather than about value creation. However, I think one of the biggest problems is complexity. Development is one of the most complex human undertakings. There are many variables that affect cost and value.

**'Developers do not have to carry the long-term costs of bad design'**

Isolating the value added by good design is not necessarily simple. Often, in the private sector, it will be someone other than the developer who benefits, especially if returns from good design are slow to come through or the added value arises after the development has been sold to an end user or investor. Developers may therefore not recognise the value of good design or they may discount it because it is hard to measure, or because they perceive limited benefit to themselves.

There are important factors that explain why the benefits of good design might not be perceived to be significant by developers. Much of the property development in the UK is still carried out and funded on the assumption that the developer will not retain a long-term financial interest in the property. Much commercial property is built using short-term finance and sold on to investors for letting to end users. There are signs that this situation is beginning to change.

3. J. Rouse, 'Measuring value or only cost', in S. Macmillan (ed), *Designing better buildings*, Spon Press London, 2004, p63 et seq



If developers do begin to retain a longer-term interest in their buildings this may lead to a better understanding of the value created by design.

Location is often a key determinant of value when land supply is limited by the planning system and the market. Value accruing to scarcity may tend to mask the marginal added value from good design. It is possible, some housebuilders tell us, to sell property in a reasonably good market without the need to add value through good design because scarcity means that almost anything will sell.

The same is less likely to be true in high value-added sectors such as quality retailing or premium office space, where being developer/owner is a more common business model. Below the premium level in the market the imperative for good design is much less clear because developers do not have to carry the long-term cost of poor design. In out-of-town retail parks, suburban housing estates and many other forms of lower value development it is less common to find developers who retain their investment for long enough to realise the long-term benefits from good design.

A similar situation can arise in the public sector as a result of how government funding works. In national and local government accounting, capital costs are usually dealt with separately from revenue (or resource consumption) costs. Often different organisations or different budget holders will have responsibility for each. In the case of building schools, for example, capital budgets are commonly held by different people from those who will pay the running costs. This can lead to situations in which designing to minimise long-term

No end in sight: a dark and depressing office corridor



running costs is not as high a priority as keeping down building costs for the people who actually get the school built.

The second thing that may mask value added is the time taken to see the return on any marginal investment required for good design. A leading housebuilder tells us that it took three years to reach break-even point on a project that earned a CABE/Home Builders Federation Building for life gold standard. We understand that it would have expected a much quicker return from a standardised scheme where the same level of early investment in a high-quality public realm, and in distinctive, non-standard house types, had not been made. The developer has since seen a higher level of overall profit from the scheme than it would have expected from a lower quality project but, as it points out, much of the value added by its decision to go for quality has accrued to the early purchasers of homes in the scheme.

The point is that this particular housebuilder had to be prepared both to accept a higher level of perceived risk and to wait longer before seeing a profit. A firm that does not have shareholders willing to defer immediate profit in exchange for extra value later on, or which doesn't have the capital to carry higher initial costs, may not see the benefit of investing in good design. This is, of course, an important reason why the planning system has to inject the requirement for quality into the system by insisting on good design.

**'Ministers have made the policy objective clear: good design is the required norm'**

In the public sector there has long been a culture of driving down unit costs at the point of delivery to maximise the number of units that can be produced. This culture is changing. The Office of Government Commerce, working with CABE, has been a strong advocate of change through its achieving excellence in construction programme[4]. The common minimum standards[5] adopted in 2005 for the whole of central government emphasise the importance of good design and the critical need to take whole-life costs into account when designing projects. Ministers have made the policy objective clear: good design is the required norm. Meanwhile, the National Audit Office has reinforced the value of good design when public money is being spent, and has emphasised the need to consider the improvement in whole-life costs that it delivers.'[6]

Many early private finance initiative (PFI) buildings have been criticised because they haven't been well designed, either as result of failures in the procurement process or the subordination of good design to short-term cost savings during bidding. Yet PFI and public

private partnership (PPP) do create an incentive to think about long-term value because the contractor has to maintain the buildings and provide services in them for the long term. A change in attitude is emerging slowly. The benefits of good design in making places easier and cheaper to manage and maintain are coming to the fore.

In spite of this the old culture dies hard. It seems that the case for good design still has to be made over and over again to people who have many conflicting objectives and processes to manage, and who still see good design as a 'nice to have' which they may not be able to afford, rather than a 'must have' they can't afford to do without.

**What is bad design?**

My frustration with waste as a taxpayer, and the persistent requests CABE receives to restate the value of good design, have led me to ask whether we are underestimating the significance of the cost of bad design, not just to government but, more broadly, to society, the economy and the environment. Are we so focused on trying to prove something positive that we are in fact ignoring a negative that is both simpler to understand and to evaluate?

An important task for CABE has been to clarify what makes good design, especially for decision makers who are not designers. Good design is not a question of taste and style. It can happen in many styles and appeal to some tastes and not others. We can judge whether or not a design is good by testing whether it is functional, whether it is durable and whether it is visually attractive This doesn't exclude innovation. The principles we apply to judge good design allow for changes in technology and taste.

In *By design* (2000), CABE and the then DETR set out to explain the characteristics that put these principles into effect in the built environment. Character, continuity and enclosure, quality of the public realm, ease of movement, legibility, adaptability and diversity are features of well-designed places, all of which have been shown to improve design quality and quality of life, whatever style is used by designers. Today we would undoubtedly add environmental sustainability and inclusiveness to that list. The point is that the characteristics of good design are well understood and can be known and applied by good designers and well-informed decision makers.

Bad design, then, is the obverse of the design coin. Places and buildings that do not have these positive characteristics are not well designed. I believe we can also say that badly designed places impose costs on their occupiers, their neighbours and on society. Economists describe this kind of cost as a negative externality, when someone does something that doesn't cost them but creates costs for other people. I shall use this term throughout this essay to describe the consequences of bad design.

**'The characteristics of good design are well understood and can be known and applied'**

All developments impose some costs on society, of course. They all consume resources and space that might be used for other things. Generally they compensate for this by generating utility and value that accrue to the community as well as their owners. For example, a beautiful, well-maintained park can be shown to increase the value of neighbouring property and quality of life.[7] However, badly designed buildings and

7. *The value of public space,* CABE 2004

public spaces don't provide enough of a compensating return to the community and, indeed, can impose external costs that are grossly abnormal.

**'Bad design produces significant negative external costs'**

The perceived significance of a negative externality may well change over time. For example, we have known for some time that setting tower blocks in wastelands of public space creates an environment that councils cannot afford to maintain. However, it is only more recently that high carbon emissions have been understood as an important negative impact. Both are, however, negative externalities over and above those which a well-mannered, well-designed development ought to impose on us. The principle that bad design produces significant negative external costs seems to me to be sound.

The question of negative externalities is vitally important in explaining why the cost of bad design isn't always taken into account when projects are planned. By transferring the costs to others the originators of those costs frequently insulate themselves from the negative consequences, which are instead borne by some or all members of the wider community.

**The costs of bad design**

So, what have those who have written about the value of good design had to say about the cost of poor design? It seems they have written relatively little because their mission has been to communicate the positive impact of good design.

However, the two main literature and research reviews – by CABE/UCL/DETR in 2001 and New Zealand

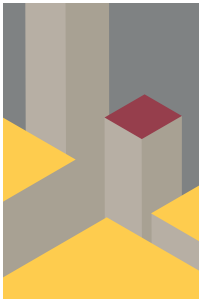
**Aerial view: Holly Street snake blocks before demolition**

© Levitt Bernstein

Ministry for the Environment in 2005 – did find some evidence of research into the costs of bad design.

The 2001 study identified economic costs such as:

- undermining the amenities delivered through planning gain, in the worst case turning them into liabilities rather than public benefits
- failure to deliver connected, well-integrated environments imposing costs that later have to be borne by public and private shareholders, although original developers have often moved on
- limiting investment opportunities at the larger spatial scale (relating to connectivity and infrastructure)
- reducing the extent to which and the speed at which the regenerative impacts of development ripple through local economies.



And it found social costs including:

- exclusionary and disconnected environments not being valued by any stakeholders, although locational rather than urban design factors were considered the primary cause of these deficiencies
- physical disconnection disproportionately impacting on the opportunities available to the less mobile
- disconnection from public transport networks and established urban areas causing staff recruitment and retention problems
- social value diminished by poorly designed public space
- public spaces used as short-term means to attract grant monies.[8]

The 2005 study warned that: 'Poor design…is likely to have significant adverse environmental, social and even economic effects. The perpetuation of poor design can lower quality of life and limit employment opportunities. An example…is low-density peripheral urban development with rigidly segregated land uses, and residential areas poorly connected to commercial activity and with poor internal connectivity. The literature is clear that the 'external costs' generated by such development are significant. Essentially, much urban design is unsustainable.'[9]

I want to discuss two cases that demonstrate what bad design costs: the former Holly Street estate in Hackney; and George's Park in Lozells, Birmingham. Both are public sector examples and both required comprehensive redevelopment to correct design problems that could not be fixed by limited tinkering. It would, of course, have been possible to cite similar cases from the private sector, and to look at more

8. *The value of urban design*, CABE 2001, pp. 77-9

9. *The value of urban design*, 2005

marginal examples where the remedy was not so severe. However, I have chosen them because they are extreme cases that make the point very clearly.

**Holly Street**

Holly Street estate was built between 1971 and 1975 in Dalston, East London. Four 19-storey tower blocks and 19 five-storey buildings were constructed. The redevelopment replaced a network of streets consisting of Victorian terraced housing, vacant sites caused by World War Two bombing and some two-storey houses built on bomb sites in the 1940s.

What was built in their place swept away most of the Victorian street pattern. The five-storey blocks were joined by bridges to form a 'snake' around two kilometres long with lock-up garages on the ground floor, two levels of flats above with outdoor deck access, topped by two-storey scissor maisonettes linked only by long internal corridors and enclosed bridges. 'Almost half of Dalston's grid of Victorian streets…was removed.'[10]

The design was completely alien to Hackney's principal residential urban form of grids of terraced streets alongside parks and squares. The estate was built at a high density of 136 habitable rooms per acre. A slab and frame system of concrete beams and panels was used to construct the 'snake' blocks. Both the system of construction and the height of the towers were actively encouraged by the government funding regime, which also required buildings to have a 60-year design life.

As its attractiveness declined and it became hard to let, the problems of the tenants became commensurately worse. Just before redevelopment 31 per cent were

10. 'Hackney: Dalston and Kingsland Road', A history of the county of Middlesex, Vol. 10: Hackney, 1995, pp. 28-33

unemployed (19 per cent for the borough), 21 per cent were lone parents (9 per cent) and 63 per cent were on housing benefit. Some 80 per cent had applied to leave the estate. Crime and drug abuse were rife, with dealing commonplace in the brutalist concrete lobbies of the tower blocks.

Having worked with the tenants at this time, however, when I was chief executive of Dalston City Challenge (one of the funders of the redevelopment), I know that most were ordinary people who wanted a decent home and a secure job and who knew they were discriminated against on account of their postcode, and written off because of external perceptions of their estate. There were clear, identifiable design failures that meant that when the problems on the estate came to be resolved it was not possible to reuse the majority of its structure. Demolition was the best option.

**'Ordinary people were written off because of external perceptions of their estate'**

In 1985 Hackney's director of housing had reported problems such as:

- dark, frightening staircases
- badly situated lifts
- long, dark corridors
- smells emanating from flats
- echoes/noise in corridors
- weak front doors
- noise from adjacent flats
- infestation
- large windows resulting in heat loss
- poor district heating system
- poor external estate lighting

Sink estate: ground floor garages, Holly Street



Home again: resident in refurbished block, Holly Street

– useless/undefined open space
– no gardens
– no play areas.[11]

By the early 1990s, a programme had been assembled to demolish the estate, keeping just one refurbished tower, with a concierge, to house older people. Around 1,000 homes were demolished. Almost 600 housing association properties replaced them, along with 40 for the council and 250 for sale, though these were concentrated in one part of the new development rather than distributed throughout the site.

The new neighbourhood, designed by Levitt Bernstein, was made up of houses and low-rise flats with no blocks above four storeys and a sports and community centre, nursery, surgery, elderly day care centre, sheltered homes and local shops. It was built to emulate the traditional street pattern. A park and play area forms the focal point of a square. All on-street parking is overlooked, perimeter block design means there are no unsupervised private spaces and homes have front and back gardens.

A survey of the first tenants in 1996 investigated their perceptions of their new homes compared with the estate before it was rebuilt. It found that:

– residents perceiving Holly Street to be dangerous fell from 60 per cent to 5 per cent
– residents who had witnessed a crime fell from 43 per cent to 1 per cent
– residents seeing graffiti or vandalism fell from 78 per cent to 9 per cent
– demand for NHS services fell by 33 per cent
– calls to the police fell by more than 33 per cent

11. T. Shoults, director of housing, London Borough of Hackney, report to the council, 1985

- physical problems with accommodation were felt to be reduced (although the first phase included units which many regard as having rooms which are too small – another result of design driven by government funding)
- perceptions of personal safety improved dramatically
- fewer tenants reported feelings of isolation
- more tenants reported feeling happy after rehousing than before.

Ten years on, the new estate has held up well physically in spite of problems with the quality of landscape maintenance and the continued social problems of some of its residents. When I visited the estate in late 2005 residents of the tower block told me of noise at night and young people hanging around the streets. Some young people were, indeed, in evidence but they were no more apparent than in other areas. The new estate is not perfect but it feels like a normal part of Hackney, fitting in with the character of the area far better than its predecessor.

The second Holly Street redevelopment took place around 20 years after the first. This was 40 years short of the design life required by government funding. It was 80-100 years less than the life of Victorian properties refurbished and adapted in neighbouring streets. Poor design played a pivotal role in the decision to demolish.

**George's Park**

My second example is simpler. George's Park in Lozells, Birmingham was laid out in the 1970s on a site made available by the demolition of a number of small businesses and an independent school. It was landscaped with mounds to provide interest. There was little else of interest about the park. It was grassed with

some tree planting, a large concrete football pitch and a dull play area. By 2000 it was an eyesore. The main users were drug dealers, fly tippers, joy riders and a group of young men who played football there. There were regular muggings and a number of rapes. Because of the lack of clear sight lines most people felt unsafe there and would not cross the park. The mounding and clumps of vegetation were ideal for hiding illegal activities. Mothers taking children to the neighbouring school would walk round the park rather than cross it.

A local policeman set up a friends group with interested bodies, including the Bangladeshi Youth Forum, Groundwork Birmingham and Kwesi Training. A grant from Sport England and neighbourhood renewal funding via the council enabled a start to re-planning the park. In 2003 and 2004 the central mounds were levelled. New ball courts, a skateboard area, a bandstand-style youth shelter chosen by young people, new railings and planting were installed. The community now takes pride in its park, and the new features have been a success. Women have reclaimed the park and it has become a catalyst for improvements in the neighbouring streets. It has been a focal point for successful collaboration between people from different ethnic backgrounds in an area that has experienced tension. It was untouched during the disturbances in Lozells in 2005.

Refurbishment of the park cost £1.2 million. This level of expenditure was necessary in part because of poor initial design. Like Holly Street the social problems of the neighbourhood contributed to the park's decline. The development of community pressure was the catalyst for change. However, the design changes have been critical to the park's success.

Before work: George's Park prior to restoration



**Direct costs, external costs and opportunity costs**
Poor design was undoubtedly a major contributor to the failures of Holly Street and George's Park. In a field as complex as human interaction in cities, it would be naïve to think it was the only cause. Physical determinism is not a sufficient explanation, though I believe it is a necessary element in forming one.

Better design would have increased the resilience of both places to deal with the social and economic problems of their communities. The evidence shows that there were negative externalities that derived from poor design in both cases and which were higher than the community has a right to expect. These included:

- higher management and maintenance costs
- higher policing costs
- higher healthcare costs
- costs associated with failed attempts at remediation
- the cost of early replacement
- higher environmental costs (at Holly Street)

– costs, both financial and social, to residents as a result of the design of the developments fostering a poor image, crime and stress.

Most of these direct costs and externalities were borne by the public sector organisations that built Holly Street and George's Park but, of course, not all were borne by the generation that built them. Some were transferred to future taxpayers. Some were transferred to individuals who lived there. Some were transferred from the council to other agencies such as the police and the NHS.

**'An estate that survives for only a third of a 60-year design life, and which is severely dysfunctional during that time, is costing far more than it should'**

So, is the relationship between poor design and resulting negative impacts strong enough in these two cases for us to be able to calculate the cost of bad design as £92 million in the case of Holly Street and £1.2 million at George's Park? Unfortunately, a formula for calculating the cost of bad design cannot be as simple as that.

Probably the biggest single externality in both cases is the opportunity cost of having to redevelop early. The design life of a park is variable but the fundamental structure of its landform should be durable. We would normally hope that new homes would last longer than 60 years, so an estate that survives for only a third of a 60-year design life, and which is severely dysfunctional during that time, is costing far more than it should. Society has had to pay early to replace its assets. It has lost the opportunity to purchase other assets that will have been badly needed by other citizens. Even so, the opportunity cost is not equivalent to the full replacement

**George's Park before and after: a derelict, poorly maintained playground has become a well-used and popular area for local people**



cost. The community has had some value out of Holly Street and George's Park and this would need to be taken into account in assessing the true cost of bad design.

**'Society and business will reap rich rewards from investment in good design'**

Renewal also presents the chance to take early opportunities to benefit from changes in technology and improved understanding of how to design out negative impacts. For example, Boardman et al[12] argue that a four-fold increase is required in the rate of demolition and rebuilding of homes to remove the most energy inefficient ones from the stock and replace them with ones that will enable us to achieve a 60 per cent reduction in carbon dioxide emissions from homes by 2050. On this basis one could argue a case for demolishing somewhere like Holly Street early and accepting that the opportunity taken to reduce carbon emissions was worth the cost. This argument is, though, redundant because we know how to avoid bad design. While the perception of the importance of carbon dioxide emissions as a negative factor is of relatively recent origin we have known for a long time how to design relatively energy efficient homes.

A methodology to predict and measure the cost of the negative externalities of bad design would, then, be more complex than one might imagine at first sight. It would need to account for opportunity costs, for additional running costs, for environmental and social costs.

What is the benefit of looking at design from this angle? Many of the circumstances that lead to bad design are relatively constant in the systems that produce

12. Boardman et al, *40% house*, Environmental Change Institute, Oxford, 2005 pp. 87-8

development. They all militate against good design: the culture of seeking least initial cost in the public and private sectors; misunderstandings about what good design looks like; the ease with which externalities can be discounted or ignored in a complex decision-making environment; the temptation to adopt untried technologies to accelerate development; the need to build a lot quickly; and the ways in which we calculate value. These pressures exist today just as they did when George's Park and Holly Street were built.

CABE is an optimistic organisation. We believe these pressures don't have to lead to repeating the mistakes of the past. But we are on record as saying that they might. In making the argument for investment in good design we have shown, with others, that society and business will reap rich rewards from it. We must also arm decision makers with the knowledge of what design mistakes can cost. In the public sector it is important to understand that this affects us both through the design decisions taken about publicly funded projects and through the impact planning decisions about private developments have on the ability of developers to transfer negative externalities to the community. In both cases decision makers need to be alert to the dangers that poor design poses, to the opportunities that communities and individuals lose through bad design and to the financial cost of failing to anticipate what we know to be the case.

Bad design costs. Good design adds value.

Dr Jake Desyllas

# The cost of bad street design

Every time you walk to the shops or try to cross the road you are encountering a classic example of bad design. Our road network has been designed with a single purpose: to serve the needs of through traffic.

This design failure is the result of an ideology of traffic engineering that put cars first and dictated that different modes of transport must be set apart and given specific rights of way.

All this was done in the name of safety and congestion relief. In reality our streets are less safe for those of us who cannot switch to other modes of transport: the chances of children between 10 and 14 dying on the roads doubled between 1955 and 1990.

There are alternatives to this failed system. Simply cutting the speed of vehicles in urban areas has a dramatic effect on road casualties. Removing the clear rights of way currently enjoyed by car drivers could boost safety by forcing them to take responsibility and slow down. And congestion can be managed by road pricing rather than building more roads.

For the moment, however, the whole country remains locked into a single design solution that segregates people and cars and leads to streets that all look the same. Why not insist that designers have the freedom to create streets as mixed spaces for all?

**Behind bars: pedestrians fenced off from traffic**

**Introduction**

The 'bad design' addressed in this article is a particular approach to traffic engineering that you can see in the streets around you. The approach is to treat streets as places that serve a single purpose: as roads for through traffic. The design ethos is that pedestrians should be kept away from the street altogether: where possible in a pedestrian-only precinct or at least on a separate level. If the pedestrians cannot be completely removed from the street, the idea is that their movement has to be micro-managed to fit around the needs of through traffic. Try walking along almost any major street in a UK city and you will experience the heavy handedness of this kind of design.

**'Underground tunnels or walkways may be provided, although it is unlikely you will venture down them if you can avoid it'**

Your movement will probably be channelled by 'guard-railings', preventing you from crossing the road where you need to, and attempting to force you to take a different route. In those places where you are expected to cross, you will have to apply for permission by pressing buttons or waiting for lights to tell you when your moment has come. When you get to the middle of the road, you might be inside a 'pen' that will force another change to your direction, creating another diversion. In more heavily engineered streets, underground tunnels or walkways may be provided, although it is unlikely that you will wish to venture down them if you can possibly avoid it.

A forest of poles for lighting, signage and often for no clear purpose at all will also probably clutter your allocated space within the street. You will have very little contact with the people in the cars zooming through the

space and everything about the design will reinforce their right of way. Like the car drivers, you will also experience the frustration of having to wait at empty junctions for the lights to change. An architect I know once referred to the experience of this kind of design as 'like living in a transport planner's theme park'.

Modern pedestrian design can be unpleasant in the mundane and annoying way described above, but there are a series of more serious 'costs' or social impacts that are created by this way of dealing with people on foot. I work in a pedestrian movement consultancy, and my company's role is to analyse how people use streets or buildings. We use this evidence to advise those who design streets on how to cater for what pedestrians really need. We also use computer models to identify how a new design is likely to be used by pedestrians. This role requires us to study many interesting examples of dysfunctional urban environments. The kinds of problems that bad pedestrian design creates include a loss of personal freedom and mobility, increased danger on the roads, undermining of local retail and displacement of communities. In the end, this is all for illusory benefits in terms of safety and congestion relief.

**The consequences of bad street design**

The first thing that you learn from studying bad street design is that it doesn't work in the way that was intended. The theories upon which the design is based bear little relationship to how pedestrians actually use space. This should not be a surprise: if streets were designed with a careful adjustment and response to user requirements then there wouldn't be so many dangerous and unpleasant places that need fixing. If you are anything like the people that we observe in our pedestrian movement studies, you will often ignore the

designs that attempt to control your movement rather than cater for it. You are probably part of a massive and ongoing daily demonstration of 'design failure' evidenced in main streets, whereby people jump over barriers, walk outside railings, walk on the red man signal, ignore underpasses and weave through traffic to try to get on with their lives as opposed to fulfilling a clumsy theory of what they will do.

**'Important streets have become such unpleasant environments that people are discouraged from using them on foot at all for many purposes'**

The design failure that you can't see is all the walking trips that don't take place anymore. Important streets have become such unpleasant environments that people are discouraged from using them on foot at all for many purposes. The decline in walking over the last 70 years is itself a result of the influential ideology of road design that came to prominence in this time.

### Planning for traffic

The bad street design that we now live with is the legacy of an idea that gained influence all over the developed world in the 20th century. The idea was that cities needed to be re-engineered to respond to the rise of the automobile, rather than the automobile having to evolve to find its own niche within the dense urban environment. In this country, the idea began with the traffic acts of the 1930s that gave vehicles special rights of way across the entire road network. This fixed a basic premise that streets should not be thought of as spaces for all people to use with due care and responsibility towards others: the automobile was seen to have changed this. Streets were now to be viewed as a series of movement channels wherein people using different

**Sub-standard: who would want to walk through an underpass like this?**

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modes of transport must be set apart and given specific rights of way over each other under fixed circumstances.

The main justification for changing cities in this way was a supposed safety argument. In the 1940s, an important proponent of this thinking in the UK was the assistant commissioner of the Metropolitan Police, Herbert Alker Tripp, who argued that pedestrians and traffic were fundamentally incompatible and that the objective of government policy should be to re-engineer streets to physically segregate the two. Tripp's argument was: 'If we could segregate pedestrians completely from the wheeled traffic, we could of course abolish pedestrian casualties.'[1] He went on to suggest that this should be achieved by new, vehicle-only roads where possible and by either grade separation or signalised crossings on streets that could not be completely segregated. According to Tripp, 'The only sure way of protecting the pedestrian is in fact to fence off the perils and to guide him, willy-nilly, into the safe path.'[2]

1. H Alker Tripp *Town planning and road traffic,* p25

2. ibid p24

This kind of thinking led to the re-planning of urban street spaces as 'classified' roads with a clear designated purpose. All streets were to be either arterial, sub-arterial or local roads and a strict prioritisation would be given to each. As Tripp put it: 'Every road should have its own character and ticket; there must be no nondescripts…once we have really sorted out our roads we will have determined what interest is to have *absolute priority* on each, the rest will gradually follow.'[3]

Giving absolute priority to particular users can work for dedicated functional spaces (like a motorway) but the application of this approach to urban streets has served to undermine one of their basic social functions. Streets are not just for through movement, they are places for people to stop in, interact with others in, buy things in and so on. By treating people as categories of transport user with fixed purposes, the design philosophy ignored the purpose of streets as places for life to take place in, not pass through.

**'Design philosophy has ignored the purpose of streets as places for life to take place in, not pass through'**

The approach evolved into the post-war era and was expressed most clearly by the influential Buchanan report on *Traffic in towns* undertaken for the UK government in 1963. This report was in line with Tripp's view that traffic and pedestrians were fundamentally incompatible and must be segregated. It also concluded that the rise in traffic required a major infrastructure policy response: re-engineer the roads inside cities to cater for the new demand and to make these roads safe. The report argued: 'The trouble is that the motor vehicle has put our urban arrangements based on streets

3. ibid p58. My emphasis

completely out of date, it really demands quite different arrangements of buildings and access ways.'[4] The solution was clear: 'The motor vehicle is really demanding a radically new urban form. We think the design we have described [full redevelopment as a multi-level system with motorways through central London] gives an indication of the kind of form required.'[5]

**Reshaping our cities**

Once this approach had become a policy objective, it filtered into the legislation and manuals that govern street design. The main focus is the *Design manual for roads and bridges,* which outlines specifics such as how crossings should be laid out and what markings should be placed on the roads. There are a whole range of broader guidelines that mandate such things as the use of guard railings. All the engineers and designers working in local government or advising developers in the private sector are aware of these guidelines. Although engineers are well aware that the guidelines often don't work well in practice, their existence means that there is a huge inertia in street design. After all, nobody will face problems in their career for advising on those design features that are in line with current manuals and guidance. The onus is always on those who deviate from current design guidance to take liability and responsibility. There are a few experiments in alternative designs, such as the Royal Borough of Kensington and Chelsea's recent remake of High Street Kensington, but this has only been possible in a location where a council has explicitly accepted liability on behalf of the designers and engineers.

The retro-fitting of cities to cope with the supposed requirements of traffic has been one of the most expensive projects embarked on in history. Aside from

4. *Traffic in towns*, p191

5. *Traffic in towns,* p142. My summary comments in square brackets

the obvious economic costs associated with such infrastructure as ring roads and urban motorways, there are more far-reaching social costs that are less apparent. The big transport infrastructure developments involved the dislocation of whole communities as large areas of cities were cleared to make way for urban motorways. This created a new social problem where none had existed: communities were split up and people had to be re-housed, usually in social housing estates. In the dramatic example of New York, the expressways that were cut through the city by the famous planner Robert Moses in the post-war era involved the relocation of 250,000 people[6], mostly into social housing. A similar process was repeated throughout the world, with residents being forcibly relocated to make way for the grand traffic schemes. These are the social costs associated with the transport vision of changing streets.

An obvious point to make about the costs of designing streets to accommodate vehicles is that the problems of safety and congestion that the design was trying to remedy have not been resolved, despite such high costs to pedestrian amenity and environment. The level of road casualties has fallen since the peak in the 1960s, but this does not mean that streets have become safer. One of the most important causal factors in the decline of pedestrian deaths is the decline in walking on streets. It is very hard to get reliable estimates on how walking has declined because official statistics have ignored walking or miscounted it in many ways. For example, its impossible to construct long time series data on distances walked owing to changes in measurements used, no pedestrian flows are collected for overall walking volume comparisons, all trips under one mile have been traditionally ignored from the *National travel survey* and, lastly, other useful indices (such as

6. Robert Caro, *The power broker: Robert Moses and the fall of New York*

**Closed for business: life drains away from once busy streets**




insurance claims) are not used in key benchmarks[7]. However, as far as we can tell, in the last 25 years of the 20th century alone walking fell in importance from 35 per cent of all trips in England to 26 per cent. The amount of walking undertaken by individuals in the UK may have declined by as much as 25 per cent between 1975 and 2000[8]. In the US, the number of trips people take on foot has dropped by 42 per cent in the last 20 years. The Nationwide Personal Transportation Survey, conducted by the U.S. Department of Transportation suggests a drop in walking from 9.3 per cent of all trips in 1977 to just 5.4 per cent in 1995[9].

## Dangerous streets

Pedestrians have withdrawn from the street in response to the unpleasant environment that it has become. Under these circumstances it is hard to tell whether any improvement in safety has been created at all or whether the reduction in deaths simply reflects a loss of mobility.

7. For a detailed discussion of these problems see Robert Davis, *Death on the streets: cars and the mythology of road safety*, Leading Edge Press 1992

8. Association for The Study of Obesity

9. Surface Transportation Policy Project

Robert Davis has argued[10] that the reduction in deaths may also simply reflect a greater ability of healthcare services treat casualties rather than any reflection of an improvement in safety, as the number injured did not fall significantly over the same key period. For certain age groups that are unlikely to be able to switch to other modes of transport, the risk of death got markedly worse: the chances of children in the 10-14 age group dying on the road doubled between1955 and 1990.

**'The level of death and serious injury is still a huge and unresolved issue of the design and management of streets'**

Given the problems with statistics in this field, it is very hard to tell exactly what has happened to the real risk faced when walking because the data are so poor. However, it can be argued that the safety gains suggested by traditional data are illusory, and that streets have become more dangerous. This danger is understood by people who withdraw from the danger and simply don't walk as much. The end result is not greater safety but less mobility.

The level of death and serious injury is still a huge and unresolved issue of the design and management of streets. What would you think of an industry kills and seriously injures[11] over 34,000 of its customers every year, with a high proportion of these being children? Not only is the safety problem still with us, it is also now well understood that this traffic planning approach to road design had the effect of entrenching the very congestion problems that it was originally designed to alleviate. The 'predict and provide' approach to catering for vehicles in cities was a fallacy because it has led to urban roadways dedicated to vehicle use, which encourages more traffic and thereby greater congestion. There is no end to

10. Robert Davis (ibid)

11. Bannister D and Duxbury E: *London's environment* (2005) Chapter 14, 'Civilising transport'

predict and provide: the more investment is made in facilitating driving, the more traffic there will be and the more difficult it will become to walk.

For those who do still venture to walk, the current design for pedestrian safety on main roads can be seen to have the counter-productive effect of making streets more dangerous to the individual. Splitting up vehicles and pedestrians leads to unintended patterns of use when people ignore designs that are too inconvenient. In our observation studies of how pedestrians actually use streets, we often find the majority of people crossing the road 'informally', that is to say away from the designated locations or during the 'red man' phase of the lights. This is especially the case in areas of high pedestrian activity. So, regardless of the design idea that pedestrians should be channelled into safe areas, the reality on the ground is that the engineering often simply doesn't work as intended. This increases the danger of conflict in places where pedestrians and vehicles meet.

An interesting example of this design failure is the junction of Oxford Street and Tottenham Court Road in central London. Post-war plans for London envisaged this as the intersection between two new urban motorways: an example of how the original plans for re-engineering streets in the 20th century were even more extreme than the changes that actually got built. When these motorways failed to be implemented, the Centre Point office tower was developed on the site. If you have every visited the area you may have found yourself facing an odd assortment of barriers, underpasses and a total lack of pavement next to Centre Point. If you have been there often, you have probably at least once ignored the barriers and walked in the road where there is no pavement provided for you (next to the fountain).



**Voting with their feet: walking in the middle of the road, rather than using an awkward crossing**

This stretch of street has been designed with a specific idea about where the pedestrians should walk, but they don't follow the rules. Pedestrians vote with their feet, walking through barriers and in the road along a heavily used bus lane. This is a dangerous kind of design failure: the risk of accident on this section of road is twice as high for the number of users as it is on the surrounding streets[12].

### The death of walking

Another significant cost of segregated transport planning has been the detrimental effect on local shops of the major new traffic arteries that divided up cities. When the idea that cities need to be reengineered to accommodate higher levels of traffic was put into practice, what this meant was that vehicles ought to be provided with bigger, wider and more segregated routes to travel along. The guiding design idea was to treat each street as part of a fixed network hierarchy and engineer it for its purpose within that hierarchy. On existing streets, roads were widened, railings were put

12. For more information, see the *St Giles Circus pedestrian movement and safety report* by Intelligent Space Partnership, available by request at www.intelligentspace.com

in, underpasses and flyovers were built. Where existing roads could not be retrofitted, new arteries were built through urban areas by demolishing the buildings and streets in their path. All over the country, huge ring roads were built around city centres, cutting off pedestrian routes between residential areas and the town centre and creating a barrier to change.

**'Carving up the street network of a town has huge effects on pedestrian movement'**

These changes had serious effects on local shops, as the roads designated as main roads in the hierarchy were often the main shopping high streets. As cities grow and develop, shops locate on those streets where there is passing trade and this itself encourages more people to use these streets. This is why many of the radial streets that connect city centres to the edge of town developed as trade routes and have local shops on them.

Carving up the street network of a town like this has huge effects on pedestrian movement patterns. Walking trips are short trips. Pedestrians are very sensitive to distances and conditions. If pedestrians are too inconvenienced, they will not walk. If pedestrians are not walking past shops, the shops themselves cannot survive. Walking itself has been in serious and uninterrupted decline with the rise of the car. The end effect is the well-known decline in local shops.

Many of the areas that we are asked to look at are high streets that used to have successful local economies but are now struggling. Streatham High Road in south London is a good example. After it was voted Britain's worst street in a 2002 CABE poll, we were asked to

identify the problems faced by pedestrians. Over the last century, this street was redesigned to accommodate traffic with the usual treatment: road widening, central reservations and guard-rails. Increasing the traffic capacity of the street has undermined the viability of local shops by progressively reducing the amount of pedestrian movement. The streetscape design undermined the use of the space as a high street and transformed it into something more like a single purpose through-route for traffic.

Given the decline in urban walking and the fact that such substantial infrastructure for cars has been created, is it really surprising that retailers want to locate in large shopping centres situated near ring roads? Once such huge infrastructure has been put in place, car-based shopping becomes effectively subsidised and has many advantages when compared to the experience you face shopping on foot locally. None of the shopping centres force their customers to walk inside guard-rails or wait at a light every time they want to go from one side of the mall to the other. The decline of the UK high street is one of the unintended results of transport planning attempts to re-engineer streets as roads. It has also encouraged the development of more car-based urban design related to the big road networks, especially the out-of-town shopping centres and low-density residential commuting areas that would not be possible without such infrastructure.

A final cost of the bad pedestrian design of modern streets is the health effects. The lower level of walking is a key contributor to the obesity epidemic that has hit western societies in the last 40 years. If people are not able to walk as an integral part of their regular life, they lose out on one of the most important basic elements of

**Desire lines: pedestrians make their own crossing, where their needs have been ignored**

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physical health. Behind the rise in obesity is the reduction in average energy expenditure over the last 50 years estimated at between 300 and 600 kcals/day, which is enough to create a significant rise in obesity unless there is a significant reduction in energy intake. In the USA the trend has been even more marked than in this country: the number of Americans defined as obese grew from 12 per cent in 1991 to almost 18 per cent in 1998[13].

## Alternative solutions

From the beginning, the transport planning approach to coping with the problems associated with the automobile was to attempt a physical redesign of streets towards segregation - in fact a sort of elimination of streets. But this design strategy isn't the only way to handle such problems as road safety and traffic congestion. There are many approaches to managing the potential conflict between people on foot and people in vehicles who are all using the same urban street.

13. Surface Transportation Policy Project, *Caught in the crosswalk,* San Francisco, California, September 1999

**'You can actually improve safety by making drivers slow down, take responsibility and negotiate for space through eye contact'**

Simply controlling the speed of vehicles in urban areas can have a huge effect on both the risk of accidents and the damage caused when the accidents happen. Once traffic is slowed to less than 20 miles per hour, the number of people killed or seriously injured falls by 57 per cent and child pedestrian casualties fall by 74 per cent[14].

Ben Hamilton-Baillie has suggested that removing the clear delineation of rights of way that drivers currently have will actually improve safety by making drivers slow down, take responsibility and negotiate for space through eye contact[15]. There are interesting examples of this approach from the Netherlands, many of which have been undertaken by the engineer Hans Mondeman. The city of Draachten is one case[16] where studies have shown that road safety appears to have improved.

There are also many ways to manage traffic congestion on urban streets at a very local level, without building infrastructure to pump vehicles through at the expense of other uses of the street. Most obviously, road users can be charged for the benefit of using a specific street at a specific time with a specific vehicle type. With the right pricing mechanism, the level of use on a road can be minutely adjusted.

There are only limited examples worldwide that can be seen in practice, the main ones being Singapore's road pricing and the London congestion charging scheme. Both of these are relatively crude, London with a single toll for peak-use times and Singapore with one variation

14. Department For Transport: *New directions in speed management,* 1998. *Slower speeds: briefing document,* 2000.

15. Hamilton-Baillie, B and Jones, P: 'Improving traffic behaviour and safety through urban design.' *Proceedings of ICE Civil Engineering 158*

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**Pedestrian by-pass: anything rather than use the underpass**

for the peak within the peak. However, the basic lesson from such schemes is that you don't have to destroy the streets of a city to control traffic jams. It could even be argued that such pricing mechanisms should be determined at a much more local level in order to give control of streets back to the local communities that live or work on them. At the moment, you don't really have any choice about how much through traffic there is on your road and you don't get any benefit from living on a heavily trafficked route. If people could decide for themselves how much traffic they want on their street they could either benefit from the road-user charging revenue that it brings or from their enjoyment of the lack of traffic if they choose to discourage it. In this way, the level of traffic would be a matter of choice and streets

could be designed with all kinds of concepts for encouraging or discouraging different modes.

**Conclusion**

The purpose of this article isn't to advocate a grand new solution to the problems of road safety and congestion that should be rolled out to all urban streets, replacing the vision epitomised by the Buchanan report. On the contrary, it is arguable that street design needs a lot less grand vision and a lot more sensitive, localised design responses to the needs of the people actually using the streets. Transport planners have tried for so long to implement a vision of segregation between pedestrians and vehicles that they have ignored what pedestrians are actually doing on the ground. Just take a moment to go and watch people using a bit of typical main road design and you will see how far detached the 'concept' of the design is from how pedestrians really use it.

What I have tried to do here is to review the unforeseen costs that this approach to pedestrian design has had. The conclusion is that that we should at least question the basic assumptions that give certain users overriding rights of way and priority in street design. At a simple level, people must share space in cities because society can't function if everything is segregated. If people are to share space, they need to know that they must do so with proper regard to each other. This means that the design and management of roads should stop trying to give special, overriding rights to particular users depending on factors such as whether they are moving inside metal boxes. In a dense urban environment, streets have to be for everyone and people will use them not just for through movement but as the stage where the events of everyday life get done.

**‘The whole country is locked in to a single design solution for managing main roads’**

The main problem that engineers and architects face when trying to design streets to cater for normal urban life is the fact that designing for segregation and single-use prioritisation is mandated by the legislative framework that they work within. To a large degree, the whole country is locked in to a single design solution for managing main roads by the extensive legislation that governs the design of highways. This is why all streets look and feel the same and there is a lack of alternative design precedents, especially for the more important urban streets. We have created such uniform streets that there is a pretty poor sample of design case studies to observe and learn from.

All we can be sure of at this point is that the embedded design approach to handling pedestrians and cars on important streets is not the only way and it does have significant social costs, particularly in terms of undermining pedestrian movement. Why not allow for more freedom to design streets as mixed spaces for living, working and driving in, rather than trying to make segregated conduits for people and cars?

Robin Nicholson

# What causes bad design?

What is bad design? And why are we surrounded by so much of it?

In spite of government backing for design quality in public projects, the international reputation of British architects and the establishment of CABE to promote high standards across all buildings and spaces, we are still wasting resources on bad design.

A badly designed building is one that does not fulfil the aspirations of its clients, meet the needs of its users or inspire the general public. It could lack the adaptability that all buildings need over time, or fail to be designed with climate change in mind.

Nobody wants bad design. But if we are to improve the quality of the buildings and spaces around us we need to understand the social, economic, cultural and political reasons why it happens.

Projects can be derailed by factors such as concentrating on the lowest cost rather than the best value, the difficulties inherent in measuring quality, the fickle nature of fashion or the rigidity of the planning system.

The tools already exist to help. Value can be created through discussing shared aspirations. The environmental impact of buildings can be reduced. And post-occupancy evaluations can help uncover what the people who use buildings really think of them.

With huge public investment going into homes, schools, and healthcare facilities it is vital that we understand what causes bad design.

**Last legs:**
**Heygate Estate, London**

I am constantly surprised by the number of badly designed buildings and public spaces that surround us. Brilliant design is rare and even good design is the exception. There are now many studies showing how the design of a building affects the performance and the welfare of its users. This weight of evidence should be driving us to demand high-quality design as a matter of course. Yet we are still not aspiring to the best. Short-term funding concerns are no excuse for poor design. Given our limited resources, surely we need to be much more imaginative. We must adopt a whole-life view of our built environment.

**'We need to realise what bad design decisions are costing us'**

I believe that bad design is pure waste. At a time when leading UK architects and engineers are in demand around the world, why are we designing places for ourselves that are just not good enough? The size of the current construction programme means that the potential for waste is vast. We need to understand why bad design comes about. And we need to realize what bad design is costing us.

**What is bad design?**

In some ways, design is an integral part of our popular culture. The performance of our cars, our mobile phones and our sound systems are all common subjects for discussion. But the design of buildings is not debated in the same way. Part of the reason is that consumer goods are much simpler to assess than buildings. For example, the public could easily see why the 1957 Ford Edsel, described as '*the Titanic of automobiles, a marketing disaster whose magnitude made it a household name*', was badly designed, and they didn't buy it. However, a building scheme such as the Holly

Street estate, discussed in Richard Simmons's essay, may initially be very popular and successful. But only after several years, when long-term design flaws start to show, does its failure become obvious.

**'Why are we designing places for ourselves that are just not good enough?'**

Our perception of design quality also depends to some extent on who we are. An architect, a bricklayer and a facilities manager are all likely to disagree with each other over what is good design in a building. A teenager, a street sweeper and a landscape architect will probably have different opinions about what makes a good urban space. Design quality is subject to professional, social, and cultural perspectives. We all want different things from our built environment.

**Why is there so much bad design?**

In my experience, good design is always a balancing act between conflicting needs. This delicate balance can be upset for many different reasons.

*A genuine lack of understanding*

A celebrated 1998 study[1] suggested that staff salaries over the lifetime of a 1,000m$^2$ office building were 200 times higher than the original cost of design and construction. Lifetime maintenance and operation costs were five times higher than construction costs. When you realised that design fees make up less than 20 per cent of the construction costs, it became obvious that savings on design quality are a false economy. Since the original research was published, further studies have reduced the ratio to 1:1.5:10 or 15, without undermining the main point. The marginal costs of good design are almost irrelevant when you really understand whole-life

1. Raymond Evans, Richard Haryott, Norman Haste, and Alan Jones, (1998) *The long term cost of owning and engineering buildings*. London, Royal Academy of Engineering

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**Identikit housing: too many new homes mimic the past and look the same**

costs of operating a building. I believe that there are still too many people running major building projects who just do not have this fundamental insight.

*Choosing the lowest price*

Competition for the lowest cost is engrained in our culture. We all want to pay as little as possible, as late as possible, whatever we buy. But this culture is highly damaging when applied to public sector buildings. Since 1997, successive Chief Secretaries to the Treasury

have tried to tackle this problem by stating that the cheapest option does not automatically provide the best value. However, I am not convinced that this message is getting across to the level at which design is procured.

*The problem of measuring quality*
Most project managers are hired to achieve a balance between time, cost and quality. Unfortunately, I have often seen how easy it is to measure the time and the cost and to forget about the quality. But quality is essential if the client is to achieve good value. It's much easier to measure quality with the tools that are now available. These tools need to become accepted as an integral part of the project manager's trade.

*Traditional opposition to art and beauty*
I am constantly frustrated by our national tendency to rubbish anything new or different, especially where art or design is involved. To some extent, attitudes to beauty in buildings are changing, as building makeovers and design debates become part of mainstream television. However, it is still difficult to win the argument in favour of buildings that are beautifully designed if they are in any way different or unusual.

**'We all want to pay as little as possible, as late as possible, whatever we buy'**

*The development control planning system*
Britain's development control planning was an inspired invention, but it has its downsides. One of the problems is that it can be highly politicised. Planning committee members are keen to be re-elected. They will not usually stand up for an unpopular project, even when it is a high-quality design. They can put huge pressure on architects to design down to the planning committee's

taste. I recently suffered an elderly planning committee member opining triumphantly in committee, 'But it's not even trying to be Georgian!' during the discussion on a significant proposal that was largely invisible to the public, and was adjacent to buildings of the late 19th and 20th centuries. Unfortunately, this is not an isolated example.

**'I am constantly frustrated by our national tendency to rubbish anything new or different'**

*The fickle nature of fashion*
Architectural fashions come and go, a recent example being the fall from favour of post-modernism. We change our minds very rapidly about how our buildings should look. Today in the UK there is a presumption that contemporary architecture should exhibit some 'wow' factor. The consequence is that many buildings are unnecessarily extrovert. Meanwhile, good background buildings will struggle to be appreciated for their quiet quality.

*Anything new is better*
The drive for good design has to come from the clients and come from the top. But the conditions in many buildings are so bad that anything new is better. On a CABE fact-finding mission to two early private finance initiative schools in 2002, I was shocked to hear from a head teacher who was completely happy with her new nursery school. She was delighted because she no longer had to worry about the needles on the front path, the poor heating, the broken windows and the lack of security. Yet I was shocked by the likely long-term effects on pupils of the lack of daylight in the deep-plan, low-cost building.

*The lack of a brief*
A building project should start with the basics: a business plan and an evaluation of the existing premises. This is the essential platform for writing a good brief. However, I am alarmed by how often this research is simply not done. At a recent Department for Education and Skills conference, a head teacher, who had successfully rebuilt his secondary school, explained that most heads want 'what they already have, but without the leaks.' This near-sightedness is very damaging, yet the problem can be easily solved. Tools such as the Construction Industry Council's *design quality indicator* (DQI) are available to get projects off to the right start.

**'The conditions in many buildings are so bad that anything new is better'**

*Unsustainable buildings*
Until recently it was still just about possible to bury our heads in the sand on climate change. However, those days are truly over. Research now suggests that the existing building stock is responsible for 40 per cent of $CO_2$ emissions in the UK. Disturbing figures such as these show us that we have to face up to the carbon challenge. We must bring all new buildings towards zero carbon emissions; we must generate renewable electricity on site; we must tackle the problem of existing buildings. Massive investment is required in our housing stock. We need to understand how our buildings work in terms of energy consumption and make improvements very quickly.

*The need for evidence*

Evidence is crucial to make the case, both for public and private investment. We have made great progress in tackling the evidence gap on design quality, with a wide-ranging portfolio of research appearing over the last 10 years. A growing range of tools is on offer to demonstrate the value of investment in good design. High-profile awards schemes recognise the quality of successful buildings. Support is available, from CABE and others, to get projects on track and to achieve the highest quality. Above all, there are still gaps in the evidence base, for example the chronic lack of post-occupancy evaluation. Housebuilders have access to a wealth of market data, which they should use to shape what they build. Post-occupancy evaluation should be a basic requirement of the government's public-private partnerships programme. We must make good use of the evidence we have, but we still need to produce more.

**'If we build schools that do not learn from the past we can easily fail the next generation'**

**Huge challenge**

We are facing a huge design challenge right now. The scale of public building in the UK cannot be overstated. Take the education sector. We will rebuild or refurbish every secondary school in the country by 2010, and invest huge sums in primary, nursery and sure start buildings. Education is where we can engage tomorrow's citizens, by creating high quality teaching spaces that promote learning. But if we build schools that do not learn from the past we can easily fail the next generation. The education building programme could show us what we can achieve if we raise our aspirations. It will also shows us what could happen

if we fail to challenge buildings that are below standard. If we continue to accept buildings that are poorly designed, the costs will be enormous. We just cannot afford bad design.

**Dr Jake Desyllas**

Jake is a founding director of the pedestrian movement consultancy Intelligent Space Partnership. He has led consulting and research projects on pedestrian movement and space use all over Europe, the USA, Australia and South America. These include high-profile developments such as the redesign of Parliament Square in London, the Leeds Eastgate urban masterplan and analysing crowd movement at Notting Hill Carnival. Prior to founding Intelligent Space, Jake had worked as a property market analyst in Berlin and as a director of Space Syntax in London. He studied property development and planning at the Bartlett, University College London. His PhD was about using computer models to identify the influence that the spatial structure of a city has on the pattern of rental values. He has published widely on the subject of pedestrian movement modelling and spatial analysis.

**Robin Nicholson CBE**

Robin is a senior director of Edward Cullinan Architects. He has worked on a range of health, education and regeneration projects in the UK and abroad since joining the practice in 1979. Previously he taught at the Bartlett and PNL and worked for James Stirling in London and Cristian Boza in Chile. Robin was a vice-president of the RIBA (1992-1994), chairman of the Construction Industry Council (1998-2000), a member of the Urban Sounding Board, the M4i board (1998-2002) and the Egan skills task force. He is a founder member of the Edge, the DQI development group and chair of CABE's enabling panel.

**Dr Richard Simmons**

Richard is a town planner and chief executive of CABE. He has a doctorate in urban history and urban economics. He worked as a planner in a number of local authorities before joining the inner cities directorate of the Department of the Environment in the early 1980s. After a period advising on regeneration policy he moved to the London Docklands Development Corporation. He led teams developing masterplans for the development of the Royal Docks and Canary Wharf, building infrastructure and selling land for development. In the early 1990s he became chief executive of the Dalston City Challenge regeneration company in Hackney. There he led a five-year programme of economic, social and physical renewal before becoming director of development and environment for the new Unitary Council of Medway.

Everyone can think of a building they hate, a place that really depresses them or a place where they'd call in the bulldozers. So why, when the problems it creates are impossible to miss, are we still surrounded by bad design? *The cost of bad design* features essays commissioned by CABE to highlight what happens when buildings and spaces go wrong. This collection is the first stage in a continuing campaign assessing the cost of bad design.

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