Determining whether a proposed new development is likely to be 'sustainable': some problems of the historic built environment

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Introduction

In the wake of the Brundtland report,[1] published in 1987, planning policy guidance in the UK was revised 'in the light of sustainable development'. Section 73 of the Local Democracy, Economic Development and Construction Act 2009 was also introduced to establish a requirement for regional and local planning bodies to exercise their functions 'with the objective of contributing to the achievement of sustainable development'. The current administration in the UK is replacing these by a non-statutory 'presumption in favour of sustainable development', which is included in its new, streamlined National Planning Policy Framework (NPPF).[2] There has been considerable debate as to whether this represents a step towards or away from 'sustainable development'.[3] In our view this debate is largely sterile. The reason is, quite simply, the same as the one put forward by the (then) Department of the Environment in 1988: without an analytical apparatus to enable one to determine whether one is, in fact, achieving sustainable development or not, a generalised policy commitment to sustainable development becomes largely meaningless.[4] Regrettably, this observation remains as much to the point, certainly in relation to the UK's planning policy, as it was then.

In this article, we set out to explore how to decide whether a proposed new development is likely to be 'sustainable'. For illustrative purposes, we draw on an example not from the natural world but from the historic built environment. However, the general principles are, we believe, identical. Our starting point is the Pearce report on the economics of sustainable development with its distinction between 'strong' and 'weak' sustainability.[5] We discuss the implications of a weak sustainability objective with its emphasis on the internalisation of environmental externalities into the developer's profit and loss account. This is followed by a discussion of the necessity of assessing externalities in monetary terms using the techniques of cost-benefit analysis (CBA) and environmental valuation, and some of the problems of doing so. Finally, attention focuses on how to use this kind of information for the internalisation of externalities in the interests of sustainability. The use of environmental assessment (EA) as a means of measuring externalities in physical terms is exemplified by reference to the problem of tall new buildings overshadowing historic buildings.

Background

In the aftermath of the 1987 Brundtland report popularising the concept of sustainable development,[6] defined as a form of development that enables us to provide for our own needs while not depriving future generations of the wherewithal to do the same, and prior to the meeting in Toronto the following year when the G7 heads of government signed up to the concept, the (then) Department of the Environment in London noted that, although there could be no argument about sustainable development as a general aspiration, measuring progress towards this no doubt desirable goal was more difficult.[7] In an effort to help resolve this dilemma, Professor David Pearce of University College, London was commissioned to look into it. Pearce's report, published in modified form in 1989 and subsequently updated in 2000,[8] pointed out that the concept of sustainable development was essentially about intergenerational equity and proposed two possible interpretations of it. The first possibility was described as *strong sustainability* and entailed passing on to future generations a stock of natural capital in no way diminished from that inherited by the present generation. This approach was dismissed by Pearce and his colleagues as far too costly for the present generation and therefore unrealistic. The alternative possibility mooted was *weak sustainability*, whereby only natural capital designated as 'critical' would necessarily be conserved for future generations. As for the rest, it would be acceptable for non-critical natural capital to be converted into manmade capital provided that the total value of natural and manmade capital was maintained.

Criticism of Pearce's approach was not long in coming, notably from Professor Wilfred Beckerman of Oxford

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1 World Commission on Environment and Development *Our Common Future* (Oxford University Press 1987) (the Brundtland Report).

2 Communities and Local Government 'National Planning Policy Framework' www.communities.gov.uk/documents/planningandbuilding/pdf/2116950.pdf.

3 See for example F Aldson 'The Localism Bill in England: planning for or against sustainable development?' (2011) 23 *ELM* 2 70–74.

4 Department of the Environment 'A perspective by the United Kingdom on the report of the World Commission on Environment and Development' (Department of the Environment London 1988).

5 D W Pearce, A Markandya and E B Barbier *Blueprint for a Green Economy* (Earthscan London 1989); updated as Pearce, Barbier *Blueprint for a Sustainable Economy* (Earthscan London 2000).

6 Note 1.

7 Department of the Environment 'A perspective' (n 4).

8 Pearce *Blueprint* (1989 and 2000) (n 5).

University[9] who, in a perhaps unnecessarily provocatively entitled book, agreed that strong sustainability was impractical and suggested that, given for example the millions of people in the Third World without access to clean drinking water, it would not only be unrealistic but also immoral to try to pursue it as a policy objective. Perhaps more interestingly, Beckerman suggested that, if one accepted the definition of sustainable development as weak sustainability and therefore the possibility of the substitution of manmade for natural capital, there was really no difference between sustainable development and what he described as: 'the old fashioned economist's concept of economic optimality'. This was an oversimplification because it made no reference to the issue of critical natural capital, which Pearce and his colleagues had been at pains to point out was an essential component of weak sustainability. However, it did reinforce the case, already accepted by Pearce and his colleagues, for using the toolbox of CBA, long advocated and used by economists, not only for the purpose of trying to achieve optimally economic outcomes, but also to take the environment properly into account in decision-making.[10]

Two problems arise from the foregoing. First, who is to decide what natural capital is critical, and against which criteria? We do not propose to go into this question here, although it is obvious that, nationally and internationally, the authorities do take a view about what constitutes critical natural capital. For example, the 1992 Earth Summit in Rio de Janeiro which, like the Toronto G7 summit, was organised in the wake of the Brundtland report, was notable for reaching agreement on international conventions on climate change and on biodiversity conservation. At national level, in the UK, the designation of areas as special protection areas (SPAs), sites of special scientific interest (SSSIs) and national nature reserves (NNRs) surely says something about their perceived importance for conservation purposes. Designations relating to the historic built environment such as listed buildings, conservation areas etc can be interpreted in a similar way.

However, we are concerned here with a second problem. If CBA is to be used as a way of measuring weak sustainability, and hence to be of assistance in making progress towards sustainable development, how then is the environmental dimension to be taken into account? In an attempt to provide an answer to this problem, in 1991 the (then) Department of the Environment published its so-called 'green leaves guide'.[11] Essentially, this is a simple guide to the problems of environmental valuation, the essence of which continues to be included in the Treasury's own *Green Book* on economic appraisal and evaluation.[12] Unfortunately, however, use of environmental valuation techniques continues to be honoured more in the breach than the observance, at least in the UK.[13] This is perhaps nowhere more obvious than in relation to spatial planning.[14]

Cost-benefit analysis and the environment

At this point, it is perhaps worthwhile to digress for the purposes of a brief discussion about the fundamental purposes of CBA. The function of the cost-benefit analyst has been well summarised as follows:

> The economist engaged in CBA is not, in essence, asking a different sort of question than the accountant of a private enterprise. Rather, the same sort of question is asked about a wider group, society as a whole, and is asked more searchingly. Instead of asking whether the owners of the enterprise will be made better off by the firm's engaging in one activity rather than another, the economist asks whether society as a whole will be made better off by undertaking a project rather than not undertaking it, or by undertaking, instead, any of a number of other projects. Broadly speaking, for the concept of the revenue of the private concern, the economist substitutes the less precise, yet meaningful, concept of social benefit. For the costs of the private concern, the economist will substitute the concept of opportunity cost – or the value forgone elsewhere by using the factors of production for the project chosen. For the profit of the private concern, the economist will substitute the concept of excess social benefit over social cost (B−C) or the ratio of social benefit to social cost (B/C).[15]

This statement is based fundamentally on the metaphor of *the invisible hand*, the mechanism postulated by Adam Smith that, through the market, directs the forces of private wants and the pursuit of profit so as to result in social benefit.[16] Fundamentally, this idea is based on the assumption that, with certain obvious exceptions, each person is the best judge of his or her own interests and that these interests are manifested in the way he/she spends his/her income and wealth.[17] One can lay down a set of conditions whereby the uncompromising pursuit of profit acts to serve the public interest. They are, essentially, that all effects relevant to the welfare of individuals be priced through the market, and that perfect competition

9 W Beckerman *Small is Stupid: Blowing the Whistle on the Greens* (Duckworth London 1995).

10 As it happens, the pursuit of economic optimality will not necessarily guarantee the maintenance of the total value of natural and manmade capital although both Pearce (n 5) and Beckerman (n 9) clearly believe that it will go a long way in that direction.

11 Department of the Environment 'Policy appraisal and the environment' (HMSO London 1991).

12 H M Treasury *The Green Book: Appraisal and Evaluation in Central Government* (Treasury Stationery Office London 2003).

13 See for example J Corkindale 'Resolving environmental disputes and providing remedies for environmental damage: the use of environmental valuation research in court proceedings in England and Wales' (2011) 23 *ELM* 2 63–69.

14 It is unfortunate that the largely misguided criticism made of the use of CBA and environmental valuation in the Roskill Commission's report on the siting of a third London airport (Commission on the Third London Airport *Report* (HMSO London 1971)) seems to have had the effect of setting back the cause of CBA in spatial planning in the UK.

15 E J Mishan *Cost-benefit Analysis: An Informal Introduction* (Allen and Unwin London 1971).

16 A Smith *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776).

17 For a fuller discussion of this point, see K Klappholz 'Equality of opportunity, fairness and efficiency' in M Peston and B Corry (eds) *Essays in Honour of Lord Robbins* (Weidenfeld and Nicolson London 1972). It need hardly be said that the assumption that each person is the best judge of his or her own interests is infinitely to be preferred to the alternative assumption!

prevails in all economic activities.[18] Of course, these conditions are rarely if ever actually met in practice. There are, in fact, a number of well-known ways in which reality diverges from them. One of the more important has to do with environmental externalities. It is one of the functions of CBA as a decision aid to try to take account of these 'market imperfections'.

The fundamental reason for spending money on CBA is to try to prevent resources being misallocated, for example by causing unjustifiable environmental damage. If bad investment decisions are made, these are, by definition, decisions that will result in resources being misdirected and wasted. Expenditure on economic appraisal[19] can therefore be characterised as an investment (or insurance) to guard against this possibility. This is the context in which the question of the extent to which resources should be devoted to environmental valuation research needs to be addressed. Unfortunately, the question about precisely how much expenditure on environmental valuation can be justified in any particular case is not one that admits of a straightforward answer. Where, for example, there is uncertainty about the environmental parameters that are likely to have a major bearing on decisions about the grant of planning permission, it might be worth devoting resources to reducing the extent of that uncertainty through environmental valuation research or through sensitivity analysis to explore just how much the parameter in question is likely to affect the decision. Equally, however, this kind of expenditure cannot be justified unless there is a reasonable prospect of a significant reduction in the extent of the uncertainty involved. Generally, the heavier the investment contemplated and the greater the uncertainty about the nature and extent of the environmental impacts, the more it is likely to be worth spending on environmental valuation research.

The problem of externalities

In her review of land use planning in England, published in 2006, Kate Barker devoted considerable attention to the functions of 'planning gain', now known as section 106 agreements but originally enshrined in section 52 of the Town and Country Planning Act 1971.[20] Although these functions have never been defined in an analytically convincing manner, the way planning gain has actually been applied by local planning authorities (LPAs) suggests four distinct purposes:

- to siphon off economic rent arising from the artificial scarcity of planning permission for new development
- to pay for public infrastructure development contingent upon new development
- to pay for environmental mitigation resulting from the adverse environmental impact of new development
- to compensate third-party interests adversely affected by new development.[21]

The first of these, namely the taxation of economic rent, was never intended to be a function of planning gain and we do not discuss it further here. The other three items come under the general heading of externalities arising from development.

The terms 'externality', 'external cost (or benefit)' and 'spillover' are used interchangeably in the literature. The essence of externalities is that their costs and benefits are not reflected in market prices, so, in the absence of the land use planning system, the developer generating them would not take them into account because they would not impact upon the profit and loss account. Since the time of Arthur Pigou,[22] economists have argued that social welfare would be increased if somehow the impact of externalities were taken properly into account, in this case by the prospective developer. The means of doing this have traditionally been held to be the imposition of taxes on activities that create external costs and the payment of subsidies for activities that generate external benefits. Alternatively, property rights are created, either through legislation or through negotiation between the interested parties involved, and redress may then be achieved through negotiation and litigation.[23]

In economics, it is usual to distinguish between pecuniary and technological externalities.[24] Pecuniary externalities entail a re-evaluation of assets and a redistribution of economic rents resulting from competitive pressures as old enterprises are replaced by new ones: there is little economic case for addressing these in the planning system, although business might well, in practice, try to prevent competitors setting up, using the planning process for the purpose. Technological externalities, on the other hand, entail real resource losses, for example through physical damage caused to neighbouring buildings during the construction process. Technological externalities, unlike pecuniary externalities, are directly relevant to the economic efficiency with which productive resources, including land, are used. Land use policy should therefore favour the cost-effective internalisation of technological externalities.[25] The conclusion of this discussion is that if 'weak sustainability' in land development

18 See for example W J Baumol *Economic Theory and Operations Analysis* (Prentice-Hall NJ 1965) ch 16.

19 It is usual to distinguish between economic appraisal and economic evaluation. The former is analysis carried out before an investment decision is made and is done in order to try to determine whether to go ahead or not. Economic evaluation is analysis carried out after an investment decision has been made and implemented and is done in order to learn any lessons about false assumptions, misguided forecasts etc made in the original economic appraisal. Somewhat confusingly, economic *evaluation* does not necessarily include (environmental) *valuation*, but this is purely a matter of conventional terminology (see for example H M Treasury *The Green Book* (n 12)).

20 K Barker *Barker Review of Land Use Planning: Final Report – Recommendations* (London HMSO 2006).

21 J Corkindale 'Planning gain or missed opportunity? The Barker review of land use planning' (2007) 27 *Economic Affairs* 3 46–51.

22 A C Pigou *Economics of Welfare* (Cosmo Classics 1919).

23 G Bannock, R E Baxter and R Rees *The Penguin Dictionary of Economics* (3rd edn Penguin Books Harmondsworth 1984).

24 J Viner 'Cost curves and supply curves' reprinted in G J Stigler and K E Boulding (eds) *Readings in Price Theory* (American Economic Association Chicago 1952).

25 F Stephen 'Property rules and liability rules in the regulation of land development: an analysis of development control in Great Britain and Ontario' (1987) 7 *International Review of Law and Economics* 33–49.

is to be interpreted as (a) the conservation of critical natural capital and (b) the economically optimal use of other natural resources, then the internalisation of technological externalities is an essential prerequisite for (b).

For a land use planning policy based on the assumption that proposed developments deemed to be sustainable would normally be granted planning permission, important questions are therefore as follows:

- how are externalities to be identified and assessed in physical and monetary terms?
- how are externalities to be internalised into the developer's profit and loss account?
- how are third parties adversely affected by externalities to be compensated?

We address these questions in turn below.

Environmental assessment and environmental valuation

The obvious starting point for identifying and measuring environmental externalities is EA. Environmental assessment as a procedure was formally introduced into the British planning system as the result of an EC directive.[26] The production of an environmental statement (ES) is an important part of the EA process, which involves the gathering of information on the environmental effects of a proposed development by the LPA and the developer. The information comes from a variety of sources including the developer, the LPA, and statutory consultees and third parties (including environmental NGOs).[27] Under the terms of the directive, developments where an EA is deemed necessary include those that might impact upon particularly sensitive or vulnerable locations, such as a national park or a SSSI, and projects with unusually complex or potentially adverse effects, such as the discharge of pollutants. Clearly, however, EA is a process that can, in principle, be extended to include all kinds of environmental externalities.

One of the origins of this article was Kaltrina Thaçi's dissertation,[28] which explored the interaction between inscribed and potential world heritage sites (WHSs) and new developments in the same environment. One of the case studies analysed was the Tower of London WHS and tall buildings in its environs. Using environmental assessment methods, the dissertation examines how the UK protects its WHSs and investigates some of the threats to its historic landmarks. We return to this case study material below.

Sometimes the preparation of an environmental statement as part of the EA process can provide a basis for internalising an externality. For example, where a development entails the loss of natural habitat, such as a salt marsh, it might be sufficient for the LPA simply to insist that new salt marsh habitat of comparable quantity and quality should be generated by the developer by way of replacement for what has been lost in the development process. It would then be up to the developer to determine whether, in meeting such a condition, it was still worthwhile to go ahead. Even in such a case, however, the implication is that the developer will have to take a view about the cost of internalising the externality. So the environmental statement is not really a sufficient basis for the assessment of environmental externalities. Important as the physical measures that the EA process yields might be, they do not of themselves provide a basis for internalising externalities into the developer's profit and loss account. This cannot be done unless a view can be taken as to what the externalities, negative or positive, might be worth. To obtain this information, it will often be necessary to resort to the techniques of environmental valuation.

Environmental valuation techniques fall into two main categories: revealed preference (RP) techniques that make use of data about actual market transactions, and stated preference (SP) techniques that entail the use of sophisticated surveys of people's opinions about what they are willing to pay to avoid environmental damage or are willing to accept in compensation for putting up with it. Hedonic pricing and travel cost are examples of RP techniques, whereas contingent valuation is a well known example of a SP technique. We do not propose to discuss these different techniques in detail here.[29] Suffice it to say for present purposes that environmental valuation techniques are notoriously imprecise in what they purport to measure[30] and also that the measures themselves have a disconcerting tendency to change, sometimes rather rapidly, over time.[31] While problems of this kind are

26 Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment [1985] OJ L175; Department of the Environment *Environmental Assessment: A Guide to Procedures* (HMSO London 1989).

27 J B Cullingworth, V Nadin *Town and Country Planning in Britain* (11th edn Routledge 1994).

28 K Thaçi 'The interaction between the Tower of London WHS and new developments: the legislative framework and shading impact' (unpublished paper presented at the Royal Institute of British Architects London 2011); K Thaçi *The interaction between inscribed and potential World Heritage Sites and new developments in the same environment* (2011) (unpublished MSc dissertation Kingston University 2011).

29 For more detailed information on environmental valuation techniques see for example N Hanley, C L Spash *Cost-benefit Analysis and the Environment* (Edward Elgar Cheltenham 1993); G Edwards-Jones, B Davies and S Hussain *Ecological Economics: An Introduction* (Blackwell Oxford 2000).

30 It is not difficult to find notable examples. For example, the Roskill Commission on the Third London Airport famously assessed the value of an historic Norman church as the cost of replacing it with a new church of high architectural merit.

31 A somewhat amusing example can be found in W R Clark 'Economics and Marketing of "Canada's Capistrano"' in A W Diamond and F L Filion (eds) *The Value of Birds* (International Council for Bird Preservation Cambridge 1987). The local planning authority in Pembroke, Ontario commissioned a CBA to help it to decide whether an island in the Ontario River should be conserved as an important swallow roost or used for development purposes. The value of the swallow roost was assessed by use of the travel cost method that reflects the number of people visiting the site. However, once the CBA had been submitted, it was widely publicised and this resulted in many more people visiting the site to view the swallows than had previously been the case. The impact on the benefit:cost ratio of the conservation option may be easily imagined!

genuine enough, they are hardly unique to the world of CBA and environmental valuation; the degree of imprecision involved is dwarfed by various branches of science, astronomy being an obvious example. Yet this imprecision does not prevent efforts to quantify key parameters. For assessing the value of environmental externalities, the obvious alternatives are simply to assume a zero value or to have the relevant value assigned by somebody in authority. Even if neither of these is done explicitly, a judgment about the values concerned will usually be implied in investment or policy decisions. It is our belief that, whilst the results yielded by environmental valuation might be imprecise, they are usually to be preferred to these obviously unsatisfactory alternatives.

Internalising environmental externalities

The developer wishing to build (say) a high rise building will necessarily be concerned about the impact on the profit and loss account. The LPA's job, on the other hand, will (or should) be to ensure that profitability equates to a positive social net benefit (B – C) or benefit:cost ratio in excess of unity (B/C > 1). To do this, the LPA will have to make some kind of assessment of the environmental externalities involved. Arguably, where it becomes apparent that the B/C ratio for a proposed new development is likely to be less than unity – ie the social costs are likely to exceed the social benefits – there is a good case for the LPA to refuse planning permission altogether. If the extent of the environmental externalities is such that they more than offset any profit the developer might otherwise make, it is not obvious how such a development can be justified at all. Another possible scenario is that the extent of the environmental externalities is such that, with their internalisation, the developer's profitability is reduced to such a degree that it is no longer worthwhile for him to go ahead. A third possibility is that development will still proceed, even with the internalisation of the environmental externalities involved. In all three cases, the decision will be affected by the internalisation process. How this process is carried out is therefore rather important.

There are, in fact, a variety of ways in which the public authorities seek to internalise externalities. The use of the Pigovian tax (or subsidy) has already been alluded to above. Litigation between the parties – usually the developer and third parties – involving injunctive or equitable relief is another possibility. A third possibility is to apply the polluter pays principle or the user pays principle[32] and to insist that polluters and users mitigate their actions in ways prescribed by the authorities. A further possibility might be to use tradable pollution permits or tradable development rights etc as a means of reducing the externalities concerned in an economically efficient manner. The list of possibilities is in fact longer than might be expected. Which option is to be used in any particular case will depend, inter alia, on the nature of the externality involved.

In this article we discuss a particular kind of externality, namely the overshadowing of historic buildings by new high rise buildings that have already been constructed or are being planned in the vicinity. We will advocate the use of contingent valuation research to gauge just how important such an externality might be. Information about how much people are willing to accept in compensation to put up with such an externality can, in principle, provide a basis for internalising the externality by indicating how much the prospective developer should be required by the LPA to pay, for example in 'planning gain', as a condition for the grant of planning permission. And, again in principle, the extent of the planning gain might be influenced by the outcome of any environmental dispute resolution procedures involving all of the interested parties.[33] Such planning gain might be paid by the developer directly as a lump sum charge as a condition for the grant of planning permission or as a continuing tax over a specified period of time or in perpetuity. What will almost certainly be difficult to ensure is that the proceeds of the planning gain accrue to those who lose from the overshadowing externality. The reason is simply to do with their number and their anonymity. Perhaps the most that can be hoped is for the proceeds of the planning gain to be channelled for conservation purposes towards the historic building(s) affected by the overshadowing.

Compensating third parties adversely affected by externalities

Where an externality has been addressed fully by environmental mitigation, as with the replacement of natural habitat, it might be that there will be no further need to address the position of third parties; in principle, they are left in a similar position as before the development in question. However, where the developer pays financial compensation, for example through planning gain or through a Pigovian tax, matters get more complicated. There has been an unfortunate tendency on the part of economists simply to assume that, as long as such financial compensation is paid to the public authorities, there is no real need to worry about the position of third parties. This attitude is in line with the prevailing approach to the welfare foundations of CBA based on the Kaldor-Hicks principle of potential compensation for those losing out. The debate about this subject is complex; however, the essential question is whether or not it is sufficient for B/C > 1 in overall terms (as the criterion requires) or whether it is also necessary for B/C > 1 for each and every individual (as required by the Pareto criterion).[34]

32 For a discussion of these concepts see M D Young *Sustainable Investment and Resource Use: Equity, Environmental Integrity and Economic Efficiency* (Parthenon 1992).

33 Environmental dispute resolution procedures have been developed in the USA; see for example L Susskind, J Cruikshank *Breaking the Impasse: Consensual Approached to Resolving Public Disputes* (Basic Books New York 1987).

34 For a discussion of this point see Hanley and Spash (n 29) ch 2.

Adherence to the Pareto criterion would require that, for a new development to receive the green light, gainers from the development would be required actually to compensate losers from it in full. The Kaldor-Hicks criterion, on the other hand, merely requires that this might potentially be possible. The lack of realism of the Kaldor-Hicks criterion was partly recognised in the 2006 *Barker Review of Land Use Planning*[35] that encouraged the idea that developers wishing to secure planning permission might be encouraged to negotiate directly with third parties likely to be adversely affected by the proposed development in order to secure their acquiescence through financial or other compensation. One of us has argued elsewhere that the interminable length and expense of many planning enquiries into proposed major infrastructure developments might be reduced if the question of compensation to third parties were investigated more thoroughly than is usually the case.[36]

Of course, compensating particular individuals in this way is not always practically possible. The overshadowing of historic buildings by new high rise developments is a case in point; as we have noted above, the third parties involved are likely to be so numerous and so anonymous that individual compensation would be almost an administrative impossibility. In such cases the purpose(s) to which any planning gain, Pigovian tax etc are devoted becomes an important matter for debate. Many kinds of externality do not fall into this category and there seems little excuse for not considering the position of third parties properly. However, the remainder of this article is devoted to the overshadowing issue, to which we now turn.

A case study – new high rise developments overshadowing historic buildings

The overshadowing of historic buildings by new, high rise developments is not, perhaps, to be regarded as a key issue in sustainable development; certainly, it would not usually be regarded as a life-threatening problem for future generations. Nevertheless, the conservation of the built environment is a problem that exercises many people, many of whom care deeply about the cultural heritage. Moreover, analytically, overshadowing of the kind described below falls into the general category of (technological) externalities and should be treated in a similar way for spatial planning policy purposes.

Tall buildings do of course have a significant role to play within a city. As a dominant entity the tall building is a landmark, a focal point and an icon. Traditionally, only special civic buildings such as town halls and churches were given the importance of having domes, towers and spires that rose above the rooftops, marking a public square, plaza or town centre. Today the competition for international investment puts pressure on city councils to allow the construction of tall buildings and architecture that portrays an image of prosperity and investment. These designs compete with each other for the spotlight, creating visual tension rather than harmony. As a consequence of building similar scattered skylines, cities across the globe are beginning to become indistinguishable from one another.[37] By their very nature, cities change dramatically. This change reflects in a different approach to design. However, by building higher and higher and by using contemporary structures and materials, historic environments may be threatened.

World heritage sites are acknowledged as important sites worthy of conservation. Those WHS sites located within urban areas need to be conserved, not only in terms of their structural integrity, but also within their urban context. Tension often results between the requirement for WHS 'maintenance' and the 'progress demanded of a dynamic urban environment'. Futuristic high-rise buildings have become popular with numerous architects designing 'landmark' structures. The Walkie Talkie building in the City of London is one such case. The Tower of London and Westminster Palace, Westminster Abbey and St Margaret's Church are the only two WHSs in central London and both are being threatened by new developments. UNESCO fears that the 900-year-old Tower has become so overshadowed by skyscrapers and other modern buildings that its historic value is being damaged.[38] As such, in 2007, the Tower of London was about to be placed on the UNESCO WHS endangered list.[39] The City of London promotes tall buildings for economic and financial reasons. As a result, the protected views of the Tower and its setting are being threatened.[40]

London is not the only city facing this problem. Cologne, Dresden, Liverpool, Macau, Prague, St Petersburg and Vienna are all examples of cities struggling to balance ongoing development with their architectural and cultural heritage and, as a result, all have had their WHS status threatened. Ideally WHSs (designated by UNESCO as the highest level of built heritage) should be fully protected from any adverse impact. With new contemporary buildings, both notions are challenged; how can historic buildings be preserved if new buildings encroach on short or long views, and dominate their settings? Likewise, in managing change in the built environment, how do new buildings fit into a diverse cityscape such as London's? Should new buildings be discouraged in instances where they affect historic buildings or be encouraged in diverse cityscapes?[41]

The planning policy framework for addressing this kind of issue in the UK is hierarchical, with strategic policy set

35 Barker *Barker Review* (n 20).

36 See J Corkindale *The Land Use Planning System: Evaluating Options for Reform* (Institute of Economic Affairs London 2004).

37 The Prince's Foundation for the Built Environment 'New buildings in old places: tall buildings' (2011) www.foundationtallbuildings.org/tall-buildings.

38 'UNESCO concerns on Tower of London' *London Evening Standard* (21 January 2006) www.standard.co.uk/newsheadlines/unesco-concerns-on-tower-of-london-7173699.html.

39 'UNESCO concerns on Tower of London' *Metro* (2006) www.metro.co.uk/news/22020-unesco-concerns-on-tower-of-london.

40 M Kuebler 'Putting words in UNESCO's mouth' (2010) *CIJ Journal* www.cijjournal.com.

41 E Hobson *Conservation and Planning: Changing Values in Policy and Practice* (Spon Press New York 2004).

Figure 1 The Eastern Cluster and buildings behind the White Tower, seen from London Bridge

nationally, applied regionally and implemented largely through the local development frameworks of local planning authorities.[42] In England, the authorities protect WHSs in two ways. First, monuments, individual buildings and conservation areas are designated under the Ancient Monuments and Archaeological Areas Act 1979 and the Planning (Listed Buildings and Conservation Areas) Act 1990. Secondly, they are protected through the spatial planning system under the provisions of the Town and Country Planning Act 1990 and the Planning and Compulsory Purchase Act 2004.

Policy on WHSs in London is set out in the London Plan that is under regular review. The London View Management Framework (July 2010) provides supplementary planning guidance to the London Plan, including the protected view of the Tower of London from the south bank of the River Thames. Locally, the Tower of London falls within the London Borough of Tower Hamlets and is adjoined by the City of London and the London Borough of Southwark. Each of these LPAs has an adopted unitary development plan containing specific policies relating to the Tower of London. These adopted plans are now being replaced by the LPAs' local development frameworks, the core strategies of which are either adopted or approaching adoption, and which provide a comprehensive framework of policies concerning the Tower of London.

The London Plan contains a number of objectives and policies relevant to tall buildings. It identifies the capital as a world city and predicts substantial growth in its economy, employment and population in the period up to 2026. This growth is driven particularly by the financial services sector, concentrated in central London and especially the City.[43] A key policy of the Greater London Assembly (GLA) is to promote tall buildings and concentrate them in the City.[44] The Corporation of London and the Mayor of London insist that towers are vital to London's status as a financial powerhouse, and for providing the thousands of new homes the city needs.[45]

On the other hand, policies 4B.10, 4.122, 4B.14 and 4B.18 of the London Plan state that large-scale buildings, including tall buildings, should be suited to their wider context in terms of proportion, composition and their relationship to other buildings. They should also be sensitive to their impact on micro-climates in terms of wind, sun, reflection and overshadowing. The Mayor of London is on record as saying that London's WHSs are particularly sensitive to large-scale, including tall, buildings.[46] The legislative framework and guidance clearly indicate that heritage assets, specifically WHSs, are fully protected from new developments. As a result, any new development should not harm WHS settings, protected views or their historical importance. Furthermore, LPAs should take into account the possibility of new developments overshadowing historic assets and competing with their innovative design, materials and proportions.

42 Historic Royal Palaces 'Tower of London world heritage site management plan' (Historic Royal Palaces Surrey 2007) 46.

43 Mayor of London 'The London Plan: spatial development strategy for Greater London consolidated with alterations since 2004' (Greater London Authority London 2008).

44 Department of Culture, Media and Sport 'Report to UNESCO World Heritage Committee: Tower of London and Westminster world heritage sites' (DCMS London 2007).

45 H Lewin 'Swiss Re Tower and other skyscrapers in London' (2010) http://harlanlewin.hubpages.com/hub/Giant-Buildings.

46 Mayor of London (n 43) 267–4.

Overshadowing of the Tower of London World Heritage Site

As the City of London is one of the world's leading financial centres, it is almost inevitable that tall buildings are promoted and will be further developed and concentrated there. The potential areas for new tall buildings are the Eastern Cluster of the City and the London Borough of Southwark. Tall buildings such as the Pinnacle, the Heron Tower, 20 Fenchurch Street, the Leadenhall Building and 100 Bishopsgate, concentrated in the City of London, are all under construction. Regarding future developments, Herzog & de Meuron plans London towers next to the Renzo Piano designed Shard. 60–70 St Mary Axe is another proposed development near the Gherkin. Together with future developments in the City and those already under construction, the Tower of London may eventually be overshadowed altogether.

Because of their scale and concentration next to each other, not far from the Tower of London, the precise extent to which tall buildings may overshadow the WHS is a significant planning concern. A sun study experiment using both scale and virtual models of the Tower and its environs was therefore conducted in order to find out the effect of both existing and planned buildings near the WHS. The height of future tall buildings was assumed to be the same as the tallest building already in the area. Thus the tallest building in the City of London is the Pinnacle, which when completed will be 288 metres high. Other future developments were therefore assumed to be also 288 metres high. On the other hand, the tallest building in the London Borough of Southwark is the Shard (310 metres high) and future developments in this area were assumed to be this height. The sun study was conducted by the 3D visualisation of the site with the option sun study in ArchiCAD and, by constructing a physical model of the site, using the lamp as a source of sun in ArchiLab. Both experiments aimed to find out the shadows of buildings from sunrise to sunset and their impact on the Tower of London. The 3D visualisation illustrates only buildings already on site, whereas the physical model also illustrates possible future developments.

Figure 2
The Walkie Talkie building in the City (photomontage)

The 3D visualisation sun study was carried out as follows:

City: London
Latitude: 51° 30' North
Longitude: 0° 10' West
Time: 20 August
Sun Azimuth: 161.42°
Sun Altitude: 1.38°
Project North: 90°

The study shows the shadows of buildings from sunrise until sunset. Photo render shots of the site were taken every hour. The results of the 3D visualisation sun study

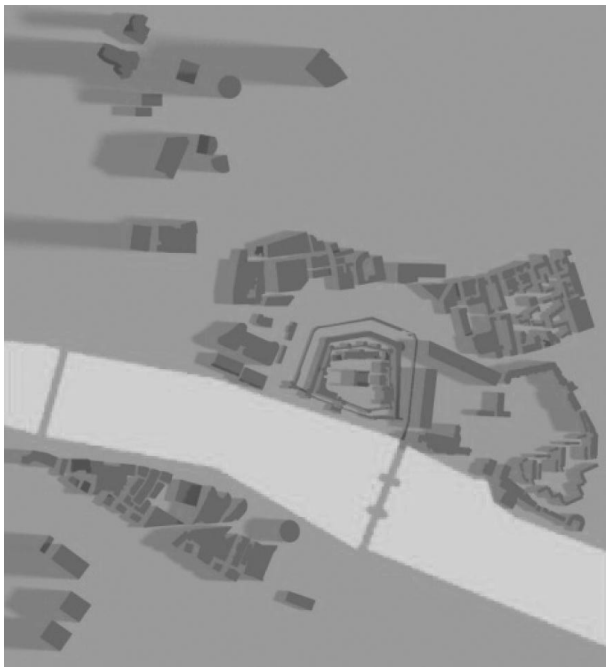

Figure 3 Sun at 7.00 am

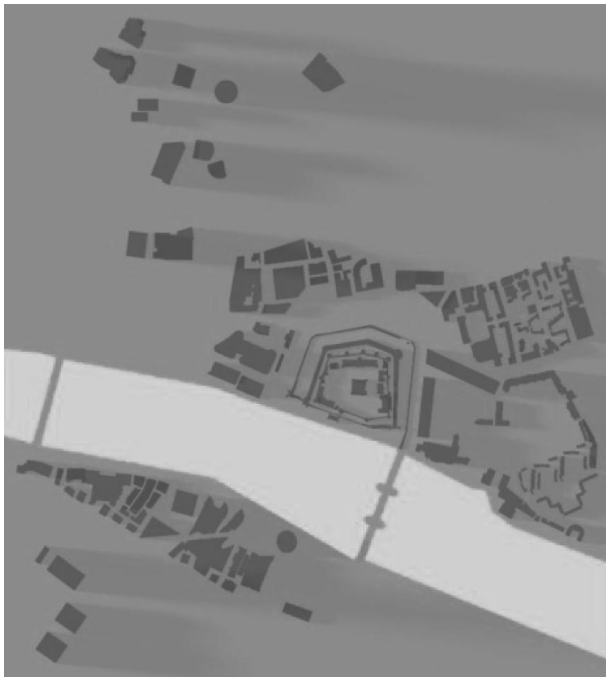

Figure 4 Sun at 6.00 pm

show that from 5.00 am until 7.30 am, the eastern part of the Tower's setting is under the shadow of the Tower Hotel and St Katherine's Dock. From then until 5.30 pm the Tower is not shadowed by buildings in the City. From 5.30 pm until 7.30 pm the Tower is shadowed by buildings to its west, including tall buildings in the Eastern Cluster during sunset. On the other hand, buildings in the Borough of Southwark do not overshadow the Tower.

As with the 3D visualisation, the sun study of the physical model was conducted from sunrise until sunset. It was first conducted with buildings already on site and then with the assumed future developments, which are presented in white. The sun study of the physical model gives the same results as that of the 3D visualisation. The difference is that the Tower of London will be overshadowed by future developments in the Eastern

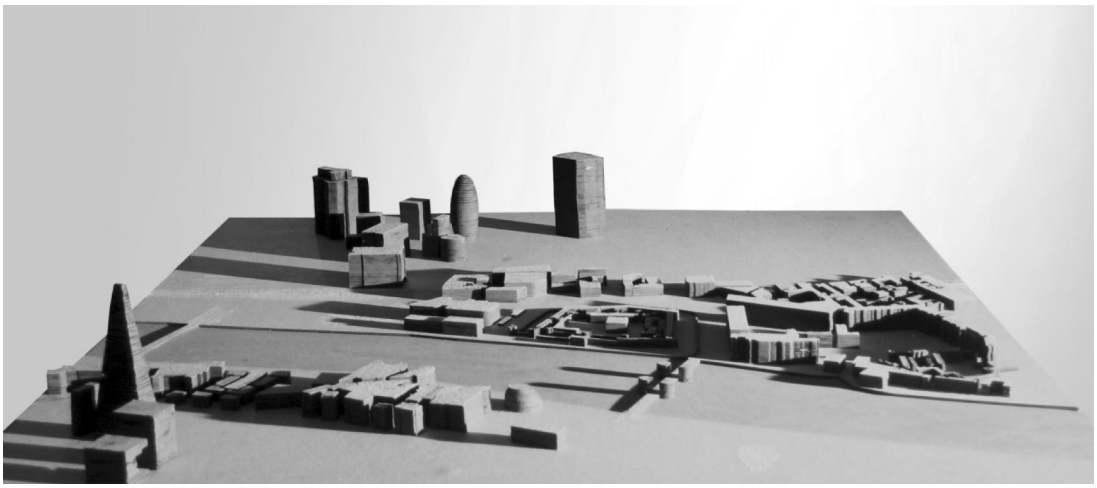

Figure 5 Physical model of existing buildings – Sun at 10.00 am

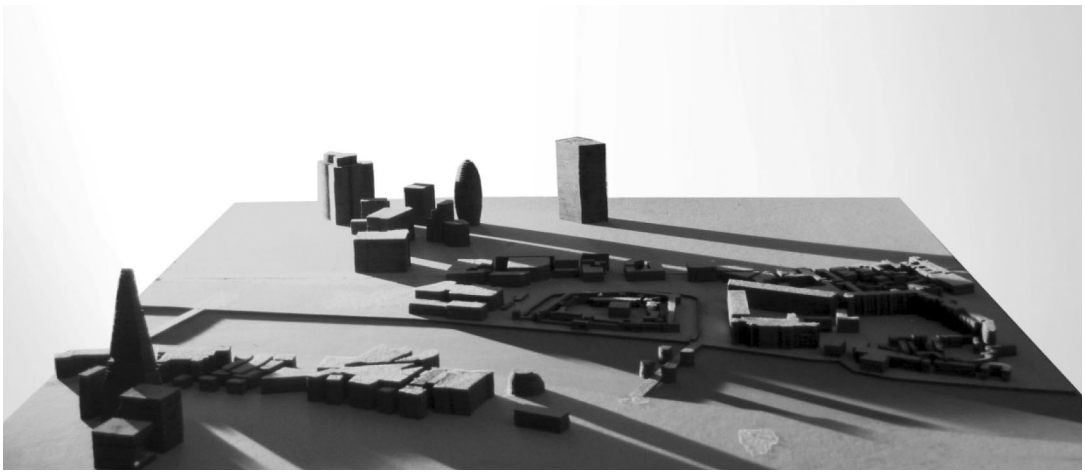

Figure 6 Physical model of existing buildings – Sun at 6.00 pm

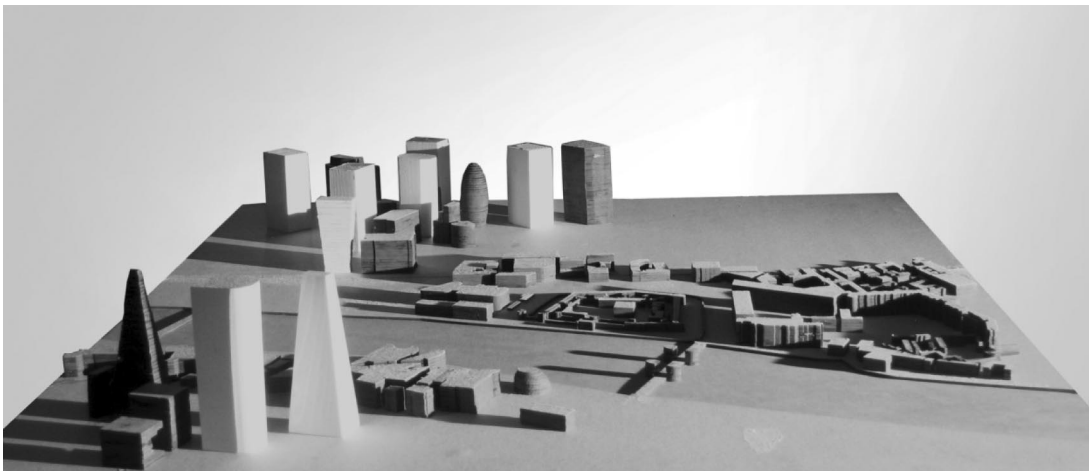

Figure 7 Physical model of existing and future developments – Sun at 10.00 am

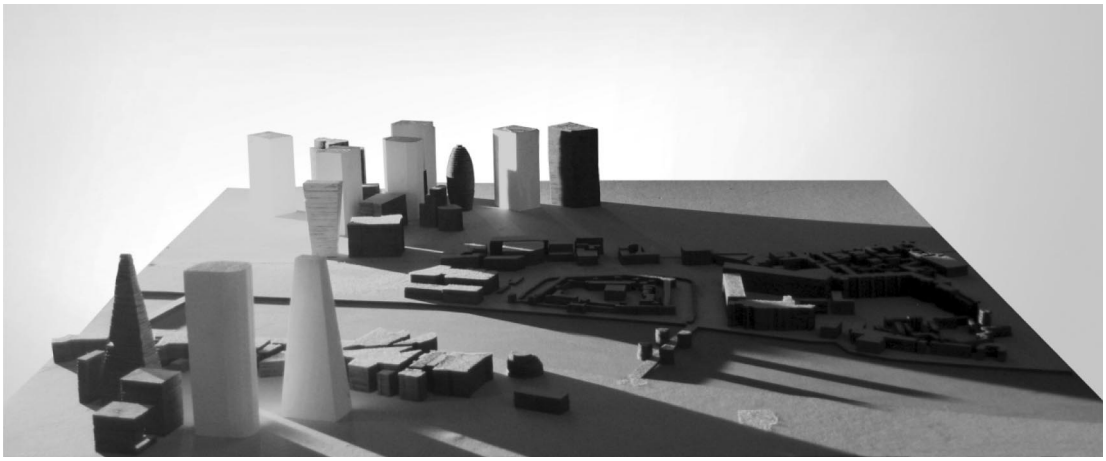

Figure 8 Physical model of existing and future developments – Sun at 6.00 pm

Cluster even earlier, specifically from 4.00 pm. If developed in the Shard cluster, future developments in the Borough of Southwark would not impact the Tower by overshadowing it.

The experiment shows that the Tower of London is in the shade of buildings to the east of its setting during the first morning hours and it is again in the shade of tall buildings in the Eastern Cluster together with other buildings to the west of its setting during the late afternoon sun. As more buildings are developed in the Eastern Cluster, the life of the Tower in sun will be considerably shortened. This means it will be overshadowed from 4.00 pm. As a result of the overshadowing, the Tower and the surrounding area will be experienced differently, making it uninviting and unpleasant to visitors. The feeling of the Tower as a historic landmark building, or the experience of its shape and architecture, will be totally different when overshadowed by tall buildings.

Internalising the overshadowing externality

The above experimental study yielded interesting observations on the overshadowing of a WHS by modern tall buildings. As such, it represents a perhaps rather unusual form of EA. Admittedly, overshadowing of this kind does not represent a threat to man's future survival on the planet. Nevertheless, overshadowing is a form of environmental externality that, analytically speaking, can be compared with other, perhaps more serious forms of environmental damage. The problem is that the study does not resolve the problem of how the externality might be internalised into developers' profit and loss accounts. To do this, the first step is to find out how much the overshadowing actually matters to the people affected by it.

Thaçi's study did involve questionnaire-based interviews with London tourists to find out their opinions regarding the impact of tall buildings on the historic fabric of the city. Tourists were asked their opinion regarding negative features of tall buildings in relation to the Tower of London. As tall buildings might have an adverse impact on the Tower, the idea was to see which features are regarded as the most serious in this respect. The results showed that 8 per cent of tourists found the tall buildings too big, 37 per cent did not like their modern materials and 17 per cent objected to both features. Based on these results, what seems to concern tourists most is the way tall buildings are designed. Among the comments made were the following:

- imposing reflective materials compete with the Tower
- London is not appropriate for tall buildings; Paris might be
- the buildings are much too close to each other
- all the above in relation to the context
- they are all glass
- they provide a strong contrast
- the Empire State building would not distract me
- the materials are too shiny and too futuristic.

Information of this kind about people's opinions is of interest but it does not provide a basis for internalising externalities. For that we need some measure of the value of the environmental damage caused and, to obtain that, we need to carry out environmental valuation research. As indicated above, economists generally categorise this kind of research into that based upon the use of RP techniques that make use of market price information to make judgments about the environmental values with which they are concerned, and SP techniques that involve what is essentially a sophisticated form of market research to

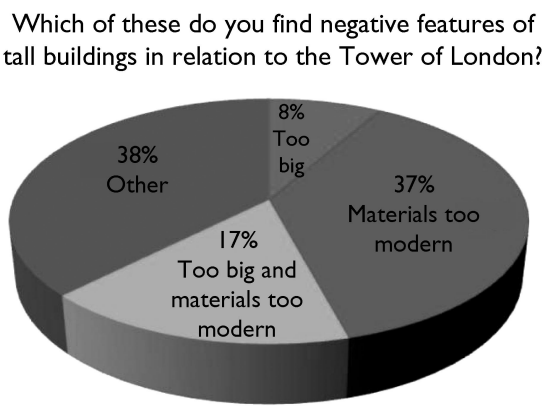

Figure 9
Pie chart results from questionnaire put to London tourists

gauge how much people are willing to pay to avoid environmental damage and/or how much they are willing to accept in compensation for putting up with it. The best known of the SP techniques is contingent valuation (CV) and it is this technique that offers the most promising way of putting a value on the overshadowing externality. In particular, a CV survey of people's WTA compensation for tolerating overshadowing seems to offer the most promising way forward.[47]

If CV research were to yield information about people's willingness to pay to avoid overshadowing and/or willingness to accept compensation for overshadowing, we would have a basis for internalising the overshadowing externality. An assessment could be made of the perceived environmental damage associated with the externality. The LPA concerned would be in a position to negotiate with the developer about modifications to the design of the proposed high rise building so as to reduce the extent of the overshadowing problem or, alternatively, to negotiate a financial contribution, perhaps in the form of planning gain, so that the overshadowing externality is reflected in the developer's profit and loss account. It seems unlikely that the proceeds of such planning gain could be used to compensate those people directly affected by the overshadowing; there would almost certainly be too many of them, and they would be too difficult to identify. Perhaps the best that could be hoped for, therefore, is that the planning gain would be used to improve the Tower of London WHS in other respects.

Conclusion

Confronted with questions about their willingness to pay to avoid overshadowing or their willingness to accept compensation to accept it, many people would probably look askance. In part, this would no doubt be to do with a lack of familiarity with such questions. However, there may be something more. There is a concept of economic value known in the literature as the 'bequest value' that involves altruism towards others. An example would be the satisfaction of knowing that conserving the Tower of London WHS from overshadowing would enhance the enjoyment of other people both now and in the future.[48] One can easily imagine that to suggest to a person that he or she might be financially compensated in effect for setting aside his/her altruism would be regarded as insulting. On the face of it, it also seems to be at odds with the Brundtland Report's message of concern for the welfare of future generations. Surely such altruism should be encouraged? Our answer to such a question would be an unequivocal yes. However, we also believe this problem might be addressed within a CV survey about overshadowing of the Tower of London by making it clear that the financial proceeds would be devoted to other aspects of conserving the WHS.

Although overshadowing cannot be regarded as a life-threatening environmental externality, it is important for conserving the built heritage that it be properly addressed. Like many other kinds of externality, the nature and extent of the overshadowing externality is susceptible to the methods of environmental assessment. However, it is our belief that spatial planning for externalities ultimately requires some assessment of the value of the environmental damage associated with those externalities. Without such an assessment, it will often be difficult to internalise the externality. Information of this kind depends on environmental valuation research designed to elicit the values of those people affected by them, not least so the externality can be internalised into the developer's profit and loss account and, ideally also, so that third parties can be compensated accordingly. This is the implication for the pursuit of the goal of sustainable development of what Professor Beckerman describes as 'the old-fashioned economist's concept of economic optimality'.

Would this be sufficient for determining whether a proposed new development will be sustainable or not – the question posed by the new NPPF?[49] If 'sustainability' is to be the test of whether planning permission should be granted for new development, as the NPPF in effect proposes, it is obviously important that procedures be put in place for determining whether the test has been passed or not. We do not pretend that the test of economic optimality outlined above provides the perfect solution, not least because CBA and environmental valuation cannot, by their very nature, take account of the preferences of future generations. By its very nature, CBA is focused on the preferences of the present generation, not least because future generations do not yet exist and therefore do not have any preferences to express. If the present generation could be somehow persuaded to adopt a more altruistic attitude to the interests of future generations, no doubt this would be reflected in its preferences and therefore in the calculations of cost-benefit analysts. Such persuasion was obviously an important purpose of the Brundtland Report. However, just as politics are often characterised as 'the art of the possible', so decision-making about the grant of planning permission needs to be concerned to reflect people's preferences. To override those preferences necessarily entails the imposition of a different set of preferences. This does not seem very democratic and where it has been practised, the consequences have usually been detrimental to society at large.

47 CV research is controversial. This was never more obvious than in the wake of the *Exxon Valdez* oil tanker disaster of 1989 in Alaska during which Exxon challenged the use of CV research in court proceedings about the extent of the damage caused by the oil spillage. After much debate, the US National Oceanic and Atmospheric Administration (NOAA) set up a panel of Nobel Prize winning economists to advise on the admissibility of CV research in US courts. The NOAA panel ultimately recommended that, provided certain conditions were met, CV research could be acceptable for this purpose. It is fair to say that experience of using the technique for litigation purposes in the UK remains limited. What we are talking about is the use of CV research in CBA rather than in court proceedings (although one can easily envisage the one leading to the other in the event of controversy over planning decisions based on the results of CBA).

48 For a brief discussion of the concept of bequest value see Edwards-Jones, Davies and Hussain (n 29) 85.

49 Note 2.