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PUBLIC VALUE, PHYSICAL CAPITAL AND THE POTENTIAL OF VALUE MAPS

Dr Geoff Mulgan, Director of the Institute of Community Studies and visiting Professor at London School of Economics

There is no doubt that a good physical environment is desirable and valuable. But what is the nature of that value? How does the value accruing to owners of property relate to value to the wider public? Can any of these kinds of value be accurately measured? And what is their relationship to other types of wealth, income or capital?

These questions matter particularly for the UK. On the one hand ours is an old country, with an old housing stock, generally old public spaces and old infrastructures. Some aspects of this oldness are greatly valued (churches, city squares, Georgian terraces &c): others are not (crumbling sewers, roads); and some parts of this legacy are in flux in terms of their perceived value (19th century working class terraced housing, Victorian schools, early shopping malls).

The UK is also peculiar because of the very low levels of public capital investment of the last few decades by comparison with other countries, during a period when per capita income has caught up with and in some cases overtaken others (the rate of investment has been rising fast but remains well below OECD norms). The result is an evident imbalance between private affluence and public poverty (and in some cases squalor), that is likely to persist for some time.

We need better to understand the nature of the value of the built environment and public buildings for at least the following main reasons:

- To judge the best levels of spending and investment
- To judge between alternative projects
- To manage investments – with the right depreciation, portfolios of risk and reward
- To determine the balance of risk and reward between public and private players

Over the last few years much work has been undertaken to better capture the diverse types of value involved in both private and public enterprise: assessments of social returns on investment; social audits; balanced scorecards; blended value assessments and many other methods are now in widespread use. All of these attempt to support better decision-making that more accurately reflects the full range of effects achieved by business and public agencies. As I will show these point to potential new methods that could be used to support better decision-making around the built environment.

In particular I recommend development of the concept of 'value maps' for the built environment – a concept that draws on the various innovations being used within organizations to cope with different forms of value and the parallel attempts to map

environmental benefits, but which is tailored to the specific situations involved in major developments of the built environment and the diverse perspectives of business, the public sector and the community.

The nature of value

Let me start with some ground clearing on the nature of value. The great insight of modern economics is that there is no such thing as intrinsic value. Nothing – whether a block of gold, a great painting, a church or a palace – has value unless it is valued by someone. Value in other words is socially created. In the market value can be judged by the prices that people are willing to pay. In the public sector, value ultimately rests on people's willingness to vote for politicians who will raise taxes to pay for goods and services. In no case does value derive from the thing itself. This is not to deny that we often share common perceptions of beauty: the combination of genetic endowments and cultural inheritance would make it very strange if there were not some common patterns in what people find attractive: the golden mean in art and architecture; the biophilia (love of savannahs, areas of grass with low hanging trees and lakes) which Edward O Wilson ascribed to a buried memory of the areas in Africa where humanity originated; the attraction to certain kinds of face or melody. But their value derives from their relationship to human beings not from any innate properties. Although there are many philosophical and aesthetic traditions which ascribe innate value to objects, these values only become social facts when someone or some institutions confirm that value.

Value and capital

All of the other concepts of economics are essentially derivative from ideas about value. Money, for example, is simply a tool for handling value: storing it, transacting it and so on. Similarly capital is meaningful only as an asset which creates value, or which has the potential to create value. This may be a stock of money which can be invested in a trading project; or it may refer to a factory, or a design or a retail centre. The value of the capital is, however, solely dependent on the value of the gods and services to which it is, or could be, put to use, and these are in turn wholly dependent on whether at a particularly point in time people choose to value those goods and services.

Usually capital is valued by measuring the price of outputs produced and consumed over time, less depreciation (wear and tear &c), and adjusted for the greater risk and uncertainty of future returns relative to current ones. So if the clothes produced by the factory go out of fashion the capital value of the factory's production line may fall (although if it is easily reprogrammable this will be less of a risk). If people cease choosing to shop in shopping malls, or cease choosing to live in mock Tudor houses, their capital value will fall (again, more adaptable buildings will be less vulnerable to this). Moreover since capital values are weighing future returns against present ones, greater economic instability will tend to diminish capital values (until in times of acute emergency they may sink near to zero). And if real interest rates rise, which means a rise in the relative value and cost of scarce financial capital, the capital values of other things, such as buildings, should fall.

Other types of capital

The concept of capital has turned out to be immensely useful for handling risks, and for managing an economy largely founded on investments over often quite long periods of time: factories, research, development and manufacture of pharmaceuticals, railways, tower blocks and broadband networks and so on.

It is perhaps not surprising that the word has been extended to other kinds of asset that have some similar properties. Human capital is a straightforward application: qualifications and skills enable individuals to earn more, and indeed UK evidence shows very high returns to certain kinds of education. Over time, the value of the capital depreciates, and in periods of rapid change this pace of depreciation may accelerate.

'Social' capital is more problematic. The phrase has become extremely popular in recent years, although this popularity has not led to a stable definition or accepted means of measurement. Some, for example, suggest that it is best understood in very similar terms to human capital as an attribute of the individual: their ability to make connections, use networks, deal with people from varying backgrounds. Others situate it in social relationships. So far social capital has not made the transition into practical use as a policy tool, though large scale surveys are now being used to map it, to compare levels of capital in different geographical areas and age cohorts (and the UK will lead the world in the extent of its evidence base on social capital).

The concept of capital has also been extended in other ways to reflect the many different sources of value in a modern capitalist economy: organizational capital, natural capital, knowledge capital. However in all of these examples it is used more as a rhetorical device than to shape useable techniques to help decision-making. This should not be surprising. It is often assumed that capital in business is a relatively unproblematic concept that is easily defined, measured and managed. There has been a long history of innovation in accounting techniques to capture shifting patterns of value in different industries – from railways and the telegraph, to large scale aerospace production and more recently the Internet – and of major failures which have resulted from the mis-measurement of costs, assets and potential returns. In each of these cases capital turned out to be much harder to pin down than one might expect: how for example to allocate the costs of design, development, testing, and vast factories in the manufacture of aeroplanes? Capital values in infrastructures have generally been very volatile (a high proportion of early railways went bankrupt; the huge overinvestment in third generation mobile phone licenses is a more recent example). There remains little consensus on how to judge the capital value of brands or intellectual property or the culture and ethos of an organization, although noone doubts that these have many of the qualities of other forms of capital.

Physical capital

So, with these caveats, what can we say about value and physical capital? The implication of what I have set out above is that we first need to be clear about the nature

of the value associated with built environments, and then consider the relationship between value and capital.

Clearly buildings and public spaces involve both value and capital: they are valued by their users and they have some of the properties of a stock of capital (indeed they are probably the purest example of capital).

Despite the booms and busts in property prices, the treatment of physical space as capital is highly sophisticated, well-understood by markets and supported by proven methodologies for valuation.

Their value and character as capital is somewhat complicated by the nature of the value of the land, which is generally taken to be the value of alternative possible uses (taking into account the costs of demolition and restoration) but which also reflects the legal status of the land (receiving planning permission for agricultural land near cities raises its values 10-100 fold).

However, compared to many other areas of economic activity the nature of physical capital is at first glance relatively straightforward, with well understood linkages between inputs and valued outputs, and well-established methods for amortization over long periods of time.

Public and private value

Unfortunately this apparent solidity breaks down when we come to the complex interrelationship between private and public value that tends to be found with public spaces. A new railway will raise property prices near stations; likewise a newly improved town centre or park. One measure of the success of regeneration projects is their impact on house prices (though this may of course displace the people who were originally intended to benefit from the regeneration). Conversely a private development may increase the attractiveness of a town square or a railway station.

Some progress is being made in understanding the links between public and private value. It is not hard to identify the direct impact of things like views over water and parks on property prices (and some evidence has now been gathered on patterns linking views to house values). Similarly local amenities like playgrounds in residential areas will have a very direct impact on property prices (as will school performance and crime levels).

The management of public spaces can then also create other kinds of value. There are many examples where improvements to urban spaces including CCTV, pedestrianisation, signage, street furniture and lighting make them more attractive, bring in more people and so directly increase the value of retail sites. Better analyses of these kinds of linkages can make the market function better, and show where owners of property may have an interest in combining together to fund common services and improvements.

Well designed markets then make it possible to commodify and monetize value into the future, so that alternative investments can be compared. All capital markets do this to some extent; derivatives markets take the logic a step further. Their more subtle role is to recognize and then organise hidden values and assets in ways that allow new value to be captured. Intelligent development of physical spaces unlocks this value: transforming the derelict warehouse or factory into a desirable place (and following some of the trends first described by Michael Thompson in his book 'Rubbish Theory' which traced the transition that many objects and physical spaces pass through from being everyday commodities, through becoming 'rubbish' to become scarce luxuries). This will be helped by relative certainty about planning horizons; credible overall strategies for urban development; low interest rates and economic stability and so on.

These aspects of private value are fairly well understood. There is also a reasonable understanding of how higher private values will indirectly flow into public funds through higher rateable values and income streams, as well as higher stamp duties. In principle, those benefiting most directly from any public investment should make some additional contribution towards it, which is why tax authorities have tried (with only limited success) to design better methods for capturing increased values in physical capital, including Tax Improvement Funds; betterment levies, and Business Improvement Districts.

In general, however, the links between private and public value are not as well understood as they should be. There are usually too many variables involved.
There are also likely to be some significant interdependencies in value that arise from less tangible behaviours that are hard to model. Social norms on cleanliness, rules on plants and gardens, can have a major influence on property values; likewise allowing 24 hour drinking in an areas may raise the value of certain kinds of property – buildings with licenses to sell alcohol and cut it in others.

Maximising public value added

Just as problematic in making sense of the value of developments in the built environment is uncertainty about exactly what is meant by public value. Most of the developments described above – from regeneration of old docks to the creation of new transport hubs – evidently create some public value as well as private value, which is why it is legitimate for the costs of development to be shared. But there is likely to be much less agreement on what that public value is, let alone how it should be capitalized.

It's worth pausing to be precise about what public value means. A lot of work is currently underway to give more substance to this concept – involving amongst others the BBC (who made the concept central to their charter renewal), the government's Strategy Unit, the Work Foundation, the Kennedy School at Harvard and others (much of this thinking is synthesized in 'Creating Public Value' published by the Strategy Unit). It is generally agreed that whereas private value is determined in markets, public value is determined by citizens' preferences, expressed through a variety of means and refracted through the decisions of elected politicians. For something to be of value it is not enough for citizens to say that it is desirable in a survey or consultation. It is only of

value if citizens – either individually or collectively – are willing to give something up in return for it. Sacrifices are not only made in monetary terms through paying taxes and charges). They can also involve granting coercive powers to the state (e.g. in return for security), disclosing private information (e.g. in return for more personalised services), or giving time (e.g. serving as a part-time special police officer). The idea of opportunity cost is therefore central to public value: if it is claimed that citizens would like government to create something, but they are not willing to give anything up in return, then it is doubtful that the asset or activity in question will genuinely create value.

Traditional market failure analysis provides one set of explanations for public action: where there are public goods that are not excludable, information failures and externalities. Some aspects of built environment developments fit into these categories: a beautiful sculpture in a city square may be a classic public good; a row of trees that reduces the noise from a major road is a classic measure to reduce negative externalities. But often public preferences go beyond these classic examples: people often want a public expression of identity and community (for example through major public buildings) and they often place a strong value on issues such as distributional equity (who gets the houses in a new development?) and due process. Citizens themselves are often involved in the production of public services in a way that is not the case in relation to private services (for example in the areas of public health, education, and community safety citizens typically provide as much of the critical input that contributes to outcomes as paid professionals).

The analyses of public value suggest that the key things which citizens value, and demand from governments, tend to fall into three categories – services, outcomes and trust. These provide some useful insights in how to think about the values associated with built environments.

The built environment and services

Taking services first, the evidence from surveys and analyses of public satisfaction points to a number of critical factors which are often underrated by people concerned with the physical aspects of the built environment. For users the physical dimension of public spaces and buildings is only one part of their experience. So for example evidence from the private sector shows that how people are treated by staff ranks only just behind quality and price of product in determining their satisfaction. Similar considerations apply to the management of housing stock or retail space. Beautiful finishes and designs may count for little if the human dimension of the public space is cold. There is a strong correlation between satisfaction with different services and whether people feel they are well informed about them; information plays a crucial role in building relationships between services and their consumers. This is undoubtedly why involvement in planning processes can increase satisfaction with the end results (though, as with all consultation, levels of satisfaction are highly dependent both on the style of engagement and the actual outcome). There is also some evidence that enhanced levels of choice can boost user satisfaction even if it does not have a discernible impact on service outcomes. Again giving communities some choices over a major development rather than offering a fait accompli will increase satisfaction. Generally people value services and assets that

they use more than ones that they only hear about through the media. According to regular surveys conducted by MORI and others in the UK roughly 80% of users of local secondary schools are very or fairly satisfied with the service provided compared to only 30% of the general population. These findings, along with evidence that people are increasingly inclined to trust those close to them rather than distant institutions, points to advocacy by service users as a potential tool for boosting satisfaction. Private sector research indicates that advocacy by staff is a potentially powerful tool for developing strong trust in services.

These findings may help to explain why so often new developments are greeted with initial hostility, but, once used, come to be supported (the swings in public attitudes to the Angel of the North are a good recent example). Another relevant piece of research is the work done in Perth on travel patterns. Direct home visits to talk people through alternative routes to work proved far more effective in changing behaviours than changes to taxes, fares and regulation.

There is no simple linear relationship between service improvements and satisfaction. Some factors will tend to make people less satisfied if they are absent but will not make people more satisfied if they increase, and vice versa. A useful research exercise might apply some of these tests to public spaces, such as major transport interchanges, shopping malls, housing developments.

Public spaces and the built environment contributing to outcomes

The public has always seen outcomes as a central part of their contract with government. In the past the most important outcomes were peace and security; in the 19th century public health and education became increasingly important; in the 20th century a range of outcomes including poverty reduction and improving the environment also moved to centre stage. These outcomes will often overlap with services. For example the service provided by a school to parents is linked to the outcome of a better educated population; similarly the service provided by the police to victims of crime is linked to their success in cutting crime.

These outcomes are an important issue for the management of public spaces and built environments. In some fields the links are very direct: good physical design and mobility in transport is an obvious example; building design and energy efficiency is another. Physical regeneration may contribute to other outcomes such as higher employment rates and incomes (though experience suggests that physical regeneration on its own tends to have much less impact on these indicators than if it is properly integrated into a holistic strategy. There is also some case study evidence on the links between:

- School environments and school outcomes (these lay behind the current projects like Schoolworks and the new 'Building Schools for the Future' fund run by the DfES)

- Hospitals, health centres, the presence of gardens and arts and recovery rates. The availability of safe green spaces should also contribute to health outcomes, reducing ADD and so on. Heart attack risk can be reduced by as much as a half by regular walking which in turn is heavily dependent on the safety and attractive of spaces.

- Physical design of town centers and housing estates and levels of crime. We now have several decades of research on designing out crime, comparing housing estates with otherwise similar social compositions and assessing the impacts of such things as lobby areas visible to the street, better natural surveillance, lighting and alleygates, wider paths and so on. More use also tends to mean less crime.

- Building quality and productivity in workplaces

- Physical design and democratic engagement: for example, changing town halls from being emblems of authority and power to becoming more welcoming places where people feel at ease participating in decision making

Some of these outcome impacts may be indirect: for example any return to more dense urban living will change transport patterns, potentially cutting journey to work times and such things as respiratory ailments. Less dense areas may turn out to be more prone to pedestrian accidents: a remarkable analysis by the Surface Transportation Policy Project found that the most dangerous places in America to walk in fact are neighborhoods (such as much of Florida) that were built without sidewalks. In these areas, regardless of income, "you are much more likely to be hit by a car than to be attacked by a stranger with a gun." Research of this kind unlocks hidden potential public value, and sometimes reveals unnoticed public costs.

What is lacking is much large scale quantitative analysis of these relationships and proper testing of defaults. To be wholly convincing analyses of this kind need to be carried out over long periods of time (to avoid Hawthorne effects – where the improvement is more a temporary effect of change rather than a permanent effect of improved design), across a sufficient range of projects, and with some means of calibrating design quality.

We also lack sufficient understanding of how public preferences are interdependent. For example, someone might support a shift to a different public transport system so long as other members of the community also supported it and were willing to use it. Likewise people might prefer some shared public spaces for children so long as others were likely to make use of it and guarantee low- key surveillance. Bringing preference of this kind to the fore depends on active conversation – rather than passive polls, surveys and consultations.

Trust and the built environment

It has long been recognized that the design and management of public spaces is likely to have an impact on overall levels of interpersonal trust. This insight lay behind much of the civic tradition of town squares, enclosed public spaces and structured conviviality.

For the UK the relationship between trust and the built environment is made complex by the broader patterns of trust. Social capital is now highly polarized by class. Moreover there is now a rough correlation between social class, the extent to which people talk to their neighbours, and their trust in their neighbours: to simplify and summarise, the poorer the area, the more people talk to their neighbours and the less they trust them. This is in part an effect of higher crime and anti-social behaviour levels which has in turn been influenced by lack of care for the physical environment.

It is interesting that the first mention of social capital in Lyda Judson Hanifan's discussions of rural school community centres in 1916 used the phrase to describe 'those tangible substances [that] count for most in the daily lives of people'. Although he primarily meant rather intangible substances such as good will there is strong evidence of links between social capital and physical environment. High social capital tends to correlate with cleaner and safer public spaces. Poverty and high levels of mobility which are often taken to be the critical risk factors for neighbourhoods may be less important than whether people participate in community organisations, have strong friendship networks and feel a shared responsibility for supervising children. Some of the claims made in the 1980s for the dramatic impact of physical regeneration of estates on crime and community cohesion turned out to be ill-founded. However, there is strong empirical and anecdotal evidence that physical design and trust are linked: for example average traffic speed in residential areas has been shown to correlate with the degree to which neighbours speak to each other and feel able to make requests of each other; patterns of lighting, design and flow influence friendship patterns.

There is also a fair amount of patchy data on the relationships between physical design and mutual commitment: the role of street shapes (long streets, cul-de-sacs, squares, crescents all appear to have different effects); of front doors and visibility; and of street grid patterns: all determine the extent to which people are likely to forge relationships with those around them. However, here too there is a lack of sufficient and sufficiently robust research with large samples.

Applications of public value

How should these insights from public value be used in relation to the built environment? There are some obvious implications:

- Value is unlikely to be maximized without better understanding of public preferences, including the service dimensions of public spaces (the often disregarded roles of the guardians of spaces) – with dialogue rather than passive surveys as the best tools for eliciting complex preferences
- Better analysis of the relationship between spaces and outcomes; here we can benefit from research done in other countries
- More rigorous assessment of the links between design and trust

Some of the methods being developed to build on the insights of public value theory may also be useful:

- Involving the public in the design of contracts – for example specifying the measures that will be used to determine payments to a PFI contractor in housing
- Weighting payments to public satisfaction: for example payments to bus services reflecting satisfaction rather than simply rewarding punctuality
- Designing road building contracts to reward the minimisation of congestion so as to ensure more holistic planning with neighbouring transport authorities
- Appointing street or block leaders to motivate and mobilize their neighbours in such things as crime reduction and recycling
- Participatory budgeting which involves the community in setting priorities: time-consuming but likely to lead to greater trust levels and resilience

These methods need to interrelate with the mainstream methods for assessing investments. Unfortunately existing technical appraisal methods have fallen somewhat behind these insights. There is a well-established body of practice in government for evaluating policy options and investment possibilities. The *Treasury Green Book*, and individual departmental methods that draw on it, set out clear methods for systematic evaluation and have primarily been developed around physical projects to inform ministerial decisions. Cost benefit methodologies are widely used around major projects such as airports, despite decades of damning criticism of some of their methodological flaws. Some aspects of value (e.g. service outputs, financial costs to business, citizens and the Exchequer) are relatively easy to quantify and therefore to use in an assessment. We have standard valuations for many of the outcomes that are important in public value (for example putting values on Quality Adjusted Life-Years to measure health and travel time for transport). Beyond this there are other well-established techniques for tackling elements of value that are very difficult to quantify (including revealed preferences, contingent valuations and rankings).

In relation to buildings and the built environment there has been marked progress in the use of much more encompassing life cycle analyses of costs and benefits, and a proliferation of more participative methods for involving those who may be affected by physical change in shaping it. However there may be a need for more synthetic methods which bring together the different types of value into a single transparent account that can be discussed and interrogated. The following section sets out what this might contain.

Value Maps for public spaces and the built environment

Bringing together the main strands of the discussion in the previous pages, we can say that any major development of architecture and the built environment is likely to involve a number of different kinds of value. All of these are amenable to some valuation, though with varying degrees of certainty. Some of these kinds of value can be capitalized and translated into NPVs; others cannot. However, clarity about their levels and nature is likely to improve the quality of decision making, and the kinds of deal which can be struck.

Some existing methods are not wholly suitable. For example, scorecards are useful for individual organizations, but cannot easily capture the different perspectives on value of different interests. Social return on investment analyses can be useful for understanding the indirect effects of initiatives. However, methods that seek to aggregate diverse numbers into a single figure (like benefit/costs analyses) seek to impose an inappropriate consistency onto what is inevitably a complex picture.

The suggestion here is that the best way to handle diverse types of value is through the production of what could be called 'Value Maps' – visual diagrams which set out in graphic form the relationships between different types of value and the flows of value they achieve. These would set on the various kinds of value involved in any major project involving the built environment including:

- Contributions to private residential property values and their indirect contribution to public tax revenues

- Contributions to private non-residential property values and the indirect contributions to public tax revenues

- Contributions to public priority outcomes – crime, health, education (some of which can be given rough monetary equivalence – what it would cost to achieve equivalent goals through other means);

- Other contributions that are likely to create public value: service-equivalent experiences of public space; trust levels; the 'merit good' qualities of particular public spaces or buildings.

Any assessments of value then need to be adjusted with an appropriate discount rate, based on the differential depreciation to give NPVs. Linkages would be described as happens in systems maps.

The values described in value maps cannot be definitive. They will range from the reasonably hard values ascribed by market processes through to much less certain estimates. One of the weaknesses of some of the newer methodologies for assessing complex values is that they try to bring all kinds of value together into aggregates. A better approach is to be explicit about the degrees of certainty around different numbers (either through a star rating – 1-5 stars depending on the solidity of estimates, or visually through font sizes and darkness).

One of the tasks of research is then to give firmer groundings for estimates of the value of less direct outcomes (for example respiratory health, crime reductions &c).

What use would such maps have? Their main purpose must be as a tool to support better decision making:

- Being explicit about likely impacts, and levels of knowledge

- Clarifying the opportunity costs associated with public investment

- Setting the harder private value figures against softer, but sometimes larger, public value measures

- Providing a basis for better informed discussion with the key stakeholders including funders and the wider public.

Ideally tools of this kind should also help to increase alignment: finding the options which simultaneously maximize both public and private values by unlocking value that otherwise lies hidden and unrealised.

Maps of this kind may also be useful tools after a major development has taken place as well as before. The built environment is constantly made and remade. Stewart Brand's book on 'How buildings learn' provides a good perspective on the nature of their value, and the extent to which physical capital is not fixed but needs constant adaptation in response to changing demands. Revisiting and revising value maps could provide a focus for communities to become more engaged with their built environment and more sophisticated about the roles of money and power in shaping them.