



## **Built heritage and its contribution to environmentally sustainable development**

*'The most environmentally benign building is the one that need not be built because it already exists'<sup>1</sup>*

The conservation of the built heritage has a contribution to make to the achievement of environmental balance in human affairs, or 'sustainable development'. There are many overlaps between the building conservation and sustainable development. Whilst there is much that is straightforward, some commentators have pointed out the difficulties in applying the breadth of the concerns of the sustainability agenda to built environment conservation programmes.

### **'Heritage'**

We can speak of 'heritage' as if we were talking about an inheritance, a bequest; things relinquished by one generation at their death and passed on to the next. We can see the built environment, as a social and public good that we have inherited, essentially, for free. Most of the built environment that surrounds us, and which provides the backdrop for our daily lives, was built before we, this generation, was born. We can choose to place a high or a low value on this inheritance that we have been gifted.

### **Sustainable development**

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<sup>1</sup> Grammenos and Russel, *Building adaptability: a view from future*, proceedings from the second international conference: buildings and the environment, June 9-12 1997, Paris, Vol. 2. Pp. 19-26

The UN Istanbul Declaration on Human Settlements and the Habitat Agenda of 1996 explored the ramifications of Rio for how we organise the global built environment. The 2003 'Global Plan of Action' stated<sup>2</sup>:

*'Conservation, rehabilitation and culturally sensitive adaptive reuse of urban, rural and architectural heritage are also in accordance with the sustainable use of natural and human-made resources. Access to culture and the cultural dimension of development is of the utmost importance and all people should be able to benefit from such access.'*

### **The economic value of standing structures**

Re-using old buildings is not news – it's been done for centuries for reasons of prestige and economy. Sustainable Development now deepens the ethical reasons to re-use old buildings. There is an economic value in a standing structure that encloses space, either partially or fully. This relates to the physical embodied energy expended in raising them into their standing positions. This has been established in the joint 2003 Heritage Council project with Dublin City Council '*Built to Last: the sustainable re-use of buildings*' study. It has shown that '*constructing new buildings on brown-field sites is more expensive than retaining and re-using existing buildings, except in circumstances where the extent of building repair and refurbishment required is extremely high*'. In the particular case of a protected structure with a complete conservation specification, the premium is 6% in narrow economic terms. Even such a project is economically advantageous if the criteria to be used are ecological using 'ecopoints', that is, if a sufficiently long-term time frame is used or a view is taken of the broader impacts. A Finnish study on carbon emission from new development describes how the replacement of late twentieth century housing incurs a long pay-off time in terms of carbon emissions<sup>3</sup>. Following the tripartite Rio definition of sustainability, the study included terms of reference in relation to economic, ecological and cultural values. It proved difficult to conceptualise a measurement system for cultural value.

Even though this study is provisional due to its small sample basis, Dublin City Council included specific policies in their development plan 2011-2017 as a result:

#### **"7.2.5.1 Promoting Sustainable Development in Conservation**

The retention, rehabilitation and reuse of old buildings can play a pivotal role in the sustainable development of the city. In many cases they make a positive contribution to both streetscape and sense of place. Dublin City Council will promote the city's built heritage including protected structures both through development management and guidance to building owners (see section 11.4.8)."

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<sup>2</sup> [http://www.unhabitat.org/downloads/docs/1176\\_6455\\_The\\_Habitat\\_Agenda.pdf](http://www.unhabitat.org/downloads/docs/1176_6455_The_Habitat_Agenda.pdf)

<sup>3</sup> Heinonen, J. Säynäjoki, A., and Junnila, S. (2011). [A Longitudinal Study on the Carbon Emissions of a New Residential Development](http://www.mdpi.com/2071-1050/3/8/1170/pdf). *Sustainability*. 3: 1170-1189. This study is free to view at: [www.mdpi.com/2071-1050/3/8/1170/pdf](http://www.mdpi.com/2071-1050/3/8/1170/pdf) See also short report on the study at <http://ec.europa.eu/environment/integration/research/newsalert/pdf/263na3.pdf>

*It is the policy of Dublin City Council:*

**FC26** To protect and conserve the city's cultural and built heritage; sustaining its unique significance, fabric and character to ensure its survival for future generations

**FC27** To seek the preservation of the built heritage of the city that makes a positive contribution to the character, appearance and quality of local streetscapes and the sustainable development of the city

**FC28** To continue to protect our built heritage, and development proposals affecting the built heritage will be assessed in accordance with the DoEHLG document "Architectural Heritage Protection Guidelines for Planning Authorities, 2004"

**FC29** To co-operate and facilitate partnerships with relevant agencies for the continued development of integrated policies in order to reinforce the character, cultural significance and tourism potential of the historic areas in the city.

Many people buy older properties for their prestige value, based on their cultural and heritage value. They express a preference for higher-quality areas in which to live or work, such as Merrion Square, Dublin. In an Irish small town, the museum is likely to be a re-used building that was built for another purpose.



*Roscommon Museum, formerly a Presbyterian church*

If it had been 'preserved' it could not have had its use changed, and would remain the unacceptable and impractical burden of the Presbyterian community in that town. Re-used as a museum, the pews may have been removed, a vestry became an office, display cases were inserted, but the character of the structure remains substantially intact.

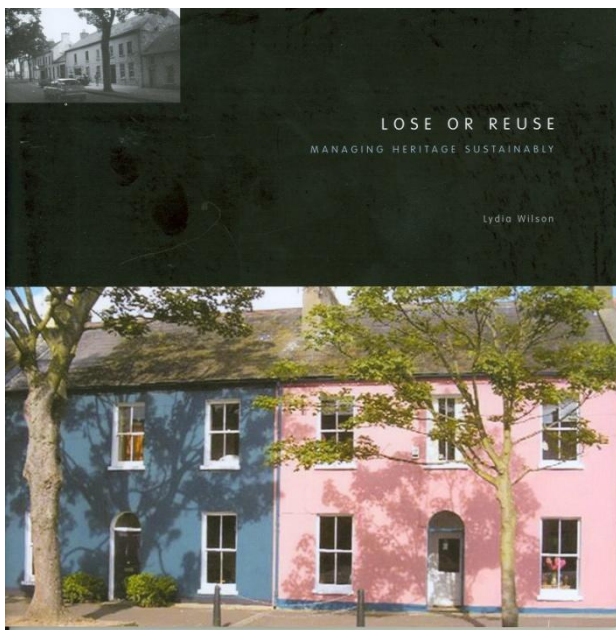
If we conserve a beautiful or historic building, we do so for all passers-by, even though they pay nothing for enjoying it – there are no tolls on the footpath outside Kilkenny Castle. The market cannot exact a price for amenity. Conversely, where a beautiful building is destroyed or a landscape made ugly, there is no financial penalty for the purveyors of ugliness or amnesia - the erasure of a fragment of our common inheritance is complete and no-one can exact a price for the loss. The cost is ‘externalised’. This is a problem not just for those who care about the built environment, but generally where public goods can’t be privately owned (for example, clean air, commonage lands, ocean fisheries). This is a fundamental conundrum in the economics of sustainability.

People are also willing to pay, in principle, for the idea of a great place continuing to exist, to ensure that they have the option of going there at some time. They may even just be happy that a great place exists, and to appreciate it from a distance. Even more abstractly, there is a third ‘non-use’ economic value, which is based on the desire to ensure that future generations can enjoy a place – bequest value. All of these are recognised by economists, who have formulae, and market-testing strategies, to put monetary figures on the cultural value. The capacity for money to represent agreed, positive, ideas of value cannot be dismissed, as it is ultimately virtually impossible not to talk about non-subjective values completely apart from its lowest common denominator currency. A Heritage Council commissioned study ‘Valuing Heritage in Ireland’, published in 2011, has some surprisingly positive things to say about the value of heritage.

### Irreplaceable materials, skill and craftsmanship

Irreplaceable materials (cut stone, large timbers, well-seasoned joinery, wavy glass) are to be found in old buildings. These are a non-renewable resource. The science of life-cycle costing of materials is in its infancy, but the decades old track record of the functioning materials found in old buildings have prove their worth in comparison to modern imitators. As a durable non-renewable resource, historic fabric deserves to be managed as responsibly as any other scarce material. The Finnish study of the environmental cost of demolishing recent housing to replace it with more thermally efficient construction, cited above, determined that the pay-back period for the changeover was thirty years

or more. Furthermore, in the Ulster Architectural Heritage Society’s recent booklet ‘*Lose or Reuse*’<sup>4</sup>, Lydia Wilson explores the comparison between modern and traditional building techniques and materials in terms of their environmental impact.



Lime mortar	vs	cement
Timber	vs	upvc
Stone	vs	steel
Nails and dowels	vs	solvents
Local	vs	distantly-produced
Thatch and slate	vs	sheet metal roofing

<sup>4</sup> UAHS, *Lose or Reuse: Managing Heritage Sustainably*, Lydia Wilson, 2007, Belfast

The traditional techniques and materials have a lower environmental impact, and can be procured locally and do not have to be shipped from the other side of the globe. Value is added through local labour and skill rather than transportation, capital and machinery. Considered strategically, a commitment to using traditional methods for constructing buildings, is a commitment to more sustainable development.

### **Avoiding waste**

Keeping buildings out of landfill dumps by not demolishing them is, *ipso facto*, an environmental benefit. It has been said that ‘... *the most environmentally benign building is the one that does not have to be built*’, a sentiment that must surely resonate in the solvent-filled nostrils of anyone with an environmental sensibility who ever walked onto a building site. The question is how can the ordinary buildings structure, with all its cultural associations and value (pleasing aesthetic proportions, contribution to the streetscape, support for neighbouring building, proven longevity of materials and environmental modifications systems like the sash windows, etc), be put to a new use with its cultural values intact?



*Modest street building, William Street, Wexford What values can be ascribed to this building?*

Even simple street buildings of the nineteenth century have character and special interest that is often completely overlooked. The craft which was used in their construction falls somewhere between the ‘high art’ of polite architecture and the vernacular<sup>5</sup>. This intermediate artisinal tradition relied on sensible plan arrangements and borrowed motifs like moulded architraves of lime render for the ornamentation of the façade, and observance of basic rules of scale and propriety to make a contribution to the street.

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<sup>5</sup> This distinction is satisfactorily drawn out in BS 7913:1998 *The principles of the conservation of historic buildings*

Conservation has been defined as *'All acts that prolong the life of our cultural and natural heritage, the object being to present to those who use and look at historic buildings in wonder the artistic and human messages that such buildings possess'*<sup>6</sup> By this definition, it is inherently sustainable, concerned with not wasting, re-using.

### **Using existing buildings as a material asset**

In Ireland, we now have more houses than we need. And yet, small-scale houses, some thatched, some slated, exist in the most picturesque corners of the countryside, tragically disused, while we built villages of holiday homes that have the potential to form social and environmental black spots in the future and to destroy the places in which they are situated.

The government created the fiscal environment in which development takes place. Government policies can be seen to be 'pro-development' or 'anti-development'. For example, the Department of the Environment, Heritage and Local Government's 2007 *Development Plans Guidelines for Planning Authorities*<sup>7</sup> states that:

*'In particular, to ensure continuity of supply of zoned residential land, planning authorities should ensure that at the time they make a development plan, enough land will be available to meet residential needs for the next nine years'.*

This policy is formulated at a time when an average of one in six of all habitable houses in the Republic of Ireland was unoccupied. It should be rescinded. But the problem is not confined to Ireland. In the UK, it was estimated that there were 1.3 million empty buildings in 2000. A socially- and environmentally-sustainable development policy would surely seek to make best use of existing resources before building new ones. It was quite clear that the primary purpose of this particular policy was to ensure that development and construction ( 'any type, any quality') took place, rather than to concern itself with 'proper planning and sustainable development', the quality of the built environment so produced, or its fitness for social purpose. It has, since the enactment of the 2010 revision to the Planning and Development Act, been replaced with a more sober, top-down, approach to land zoning in the form of 'core strategies' that align national and regional policy and projections with the local provisions. The means of completing and making use of the housing that has recently been built and which remains unused is still being worked out.

### **Valuing the intimate and longstanding knowledge of how places work**

Conserving existing structures retains accrued environmental wisdom of a particular place. Buildings built on flood plains, or on the tops of hills are obvious examples. But streets are hardly being built any more. And yet, the placing of diverse commercial and social functions in close proximity to each other and within easy reach of the public has a high social, economic and cultural value. The existing streets and functioning urban areas, especially in small towns, are becoming a redundant resource

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<sup>6</sup> Feilden, B., *Conservation of Historic Buildings*, Architectural Press, London, 3<sup>rd</sup> Edition, 2003

<sup>7</sup> *Development Plans Guidelines for Planning Authorities* Department of the Environment, Heritage and Local Government, 2007, para. 4.14, p.38

as our environment is shaped around car-based lifestyles. The brightly-lit petrol station has become the new corner shop. Whilst the main street dies an economic death.

### **Traditional and local craft skills**

Conservation projects more complex, require skills at many levels, from tradesman to supervisor to architect. This means that if we as a society give an economic value to a certain type of work that requires skills (rather than machines) to achieve its ends, the capacity to deliver this quality of outcome remains with the person who carries it out. Thus, it remains in the local economy, capable of delivering an aspect of quality of life in the future.



*Re-pointing a wall in lime mortar, Moone, Co. Kildare. 2002*

In contrast, if a JCB or a Komatsu is used to demolish a building, the profit on the sale of the machine is repatriated abroad. If a new steel structure is to be erected in place of an old masonry and timber one, the price for the materials will now reflect the competing demand for steel in China. UPVC is made from oil, a substance over which we are about to get quite anxious. The construction and property development industries are inescapably plugged into the global economy. Building conservation starts with the building owner getting a ladder and cleaning his or her own gutters. It takes 'minimum intervention' as axiomatic. It has the capacity to be delivered locally, to be locally empowering and to contribute to retaining local distinctiveness and the local economy.



*High Street and the Tholsel, Kilkenny*

### **Holding onto the specialness of a building or place**

Many places of social and cultural significance are threatened in a changing world. The historic, built or cultural environment, by merely surviving, transmits social meanings through time. Historical places, objects and manifestations of cultural, scientific, symbolic and spiritual value are important expressions of the culture, identity and indeed religious or spiritual beliefs of societies. Their role and importance, particularly in the light of the need for cultural identity and continuity in a rapidly changing world, need to be promoted. Buildings, spaces, places and landscapes charged with cultural and spiritual value represent an important element of stable and humane social life and community pride. This is reflected in the UN Istanbul Declaration quoted above.

We are the temporal custodians for the inheritance of great artistic achievements and the more mundane works of technical virtuosity of the past. If we enjoy this inheritance, however mundane or ambitions, we have a duty to ensure that it is conserved, and is available to those who come after us. The fixed appearance of a place, emblazoned in our memories in formative years, is part of who we are. To conserve a place is not only *'to ground a shaken identity'*, it is also to respect the way places are physically and socially constructed. Continuity is a positive social value of the built environment. The value of that continuity may only be recognised when it is threatened, and in this circumstance, heritage becomes an excuse for opposing development.

The British guidance on the Historic Environment, PPG 15, states that:

*'The presence of the physical survivals of our past adds to the quality of our lives, by enhancing the familiar and cherished local scene and sustaining the sense of local*



*distinctiveness which is so important an aspect of the character and appearance of our towns, villages and countryside.'*

Like aesthetic feelings, an attachment to the 'familiar and cherished scene' is a very subjective emotion. Yet it is a bedrock of human identity, and we should dignify our attachment to, and need for stability in the world around us, by thinking carefully before deciding to change it.

Myles Glendenning, of the National Monuments Record of Scotland, reflecting on the British experience of listed building consent, has written that *'the most valuable aspect of the system of listed building consent is arguably that it compels a pause for thought, an opportunity for the intellectualisation of change, within the development process. That opportunity should ideally be extended to all buildings and environments, however banal or recent...'*<sup>8</sup>. The greater the deliberation, the greater the possibility of capturing greater amounts of cultural value –aesthetic, historic, social and environmental, as well, obviously, as economic - in the developmental project. On mature reflection, most developers acknowledge that the planning system as a whole is necessary to regulate the market for development, and that planning can indeed, through its sceptical interrogation of development proposals, add value to the product of the development process.

### **Aesthetics**

Old buildings have aesthetic value. They are frequently pleasing and picturesque. Our ideas about what is beautiful are received and inculturated, and our ideas about what a beautiful building should look like are conditioned by what previously-existing buildings looked like. There are Languages of Architecture<sup>9</sup>. Modern architecture very often relies on 'newness value'<sup>10</sup> for effect; however, the durability of modernist materials has provided some acute issues in building repair and conservation.

Ideas about beauty are contested, *'involving dispute not only about what is beautiful but also about who has the power and authority to take decisions about what is beautiful'*<sup>11</sup>. Nonetheless, any discussion relating to the capacity of human beings to appreciate differences in quality of life, will return to the phenomenology of perception.

### **Sustainability Impact Assessment**

This attempts to set out side by side the three types of value that are directly related to sustainability as defined in the Rio declaration – the Economic, Social and Environmental. It is based on a paper called 'Sustainability of the Architectural Heritage'<sup>12</sup>. It takes into account public participation, equity and futurity. It recognises that appraisal should be of more than one option, as

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<sup>8</sup> Glendenning, Miles, 2001, *Beyond the Cult of the Monument*, *Context* 70, June 2001, pp. 15-18.

<sup>9</sup> Alexander, Christopher, 1979, *The Timeless Way of Building*, Centre for Environmental Structure, Berkeley, CA

<sup>10</sup> The concept is persuasively defined and discussed in Reigl, Alois, 1903, (translation, 1982): *'The Modern Cult of Monuments: Its Character and Origin'*, *Oppositions*, Fall 1982, Rizzoli, New York

<sup>11</sup> Demos, 2005, *Challenge and Change: HLF and Cultural Value*

<sup>12</sup> Dimitrijevic, B., Langford, D., MacLeod, I. and Maver, T.W., 2000. "The Sustainability of Architectural Heritage." in: Proceedings of the BIAT Conference Technological Innovation in Design and Construction, Dublin.

well as the 'do nothing' option, and that both experts and the public have a right to express an opinion and to form a judgement as to the appropriateness or otherwise of development proposals.

Economic appraisal is to be considered at a local and a regional (or national) level. Life cycle costing is also included as an objectively evaluatable type of information. Public participation is not required for the technical matters such as the national economic impact, but it is for the local. This approximates to economic appraisal, differing from conventional cost-benefit analysis in that it includes the value of the building materials and the cost implications of their use.

Social and cultural issues are tackled in accordance with an unspecified but evolving methodology under three headings (a) Cultural identity, (b) Cultural and Social Equity and (c) Other issues of importance for the affected community. Whilst this portion of the evaluation is not fully articulated, it could be envisioned as roughly similar to the process of throwing open to the public the right to comment on planning applications that we currently enjoy. But perhaps in a more structured way.

The environmental audit is carried out by experts, and is also broken into three components (a) natural resources impacts, (b) energy usage or conservation and (c) Pollution. This approximates to conventional Environmental Impact Assessment.

Table 1. A framework for SIA of development proposals with a hypothetical example of SIA process

(1) Economic, social and environmental appraisal of development area (baseline for SIA)		(2) Application of sustainability principles in the appraisal PP    E		(3) Development goals	(4) Development Option 1			(5) Development Option 2			(6) Option 3: No development			(7) Expert assessment	(8) Public assessment	(9) Final Decision			
					EV	E	F	EV	E	F	EV	E	F				Option	Option	Option
					Option 1	Option 1	Option 1	Option 1	Option 1	Option 1	Option 1	Option 1	Option 1				Option 1	Option 1	
Economic Appraisal (including the role of the built heritage)	National significance	N/A; EA	✓	Defined goals	+2	+2	+2	+1	+2	+1	0	0	-1	Option 1	N/A; EA	Option 1, but with improvements regarding cultural identity and equity to meet public requirements			
	Local significance	✓	✓	"	+2	+2	+2	+1	+1	+1	0	0	-2	Option 1	Option 1				
	LCC of buildings	N/A; EA	✓	"	+2	+2	+2	+1	+1	+1	0	0	-1	Option 1	N/A; EA				
Social and cultural profile (including the role of the built heritage)	Cultural identity	✓	✓	"	+2	+2	+2	+1	+1	+1	0	0	0	Option 1	Option 2				
	Cultural and social equity	✓	✓	"	+1	+1	+1	+2	+2	+2	0	0	0	Option 1	Option 2				
	Other issues of importance for community	✓	✓	"	+2	+2	+2	+1	+1	+1	0	0	0	Option 1	Option 1				
Environmental audit (including the role of the built heritage)	Natural resources	N/A; EA	✓	"	+2	+2	+2	+1	+1	+1	-1	-1	-2	Option 1	N/A; EA				
	Energy conservation	N/A; EA	✓	"	+2	+2	+2	+1	+1	+1	-1	-2	-2	Option 1	N/A; EA				
	Prevention of pollution (outdoor and indoor)	N/A; EA	✓	"	+2	+2	+2	+1	+1	+1	-1	-1	-1	Option 1	N/A; EA				

PP – public participation  
 E – equity (intragenerational, intergenerational)  
 EV – environmental value, i.e. added economic, social and environmental value  
 F – futurity (long term value and impact)  
 N/A – not applicable; EA – expert assessment

Scoring system:  
 Positive impact: +1 to +2  
 No change: 0  
 Negative impact: -1 to -2

There are therefore nine component evaluations, four of which are carried out by the public, or the community, as well as the experts. A simple numerical value is applied, but the sums are not cumulative. The merits of each option as considered by both groups can be compared, and by laying the relevant component evaluations side-by-side, a decisive judgement is facilitated but not by a reductive or deductive process.

### A challenge - Industrial Heritage

Industrial heritage may suffer in the fulmination of built heritage conservation values that may arise as a result of the sustainability agenda. The over-consumption of the Earth's resources is enacted in a factory. The 'dark satanic mills' cast a long shadow over post-industrial society. Environmentalists are harsh in their criticisms of the impact of industry on their surroundings. And it was incomparably worse in the past. Many industrial heritage sites have what are politely termed 'legacy issues', the result of careless disposal of by-products of the production process. Materialism and consumerism place little value on the mode of production, and these places, the most utilitarian of all, fall derelict. Their hulking machines within becoming quaint with age and as the heritage gaze falls on them, but their presence militates against the re-use of the building.

### **Conclusion**

There needs to be broader social acceptance of the principle of sustainable development, and the implementation of policies that are thoroughly informed by the principle. In the area of the built heritage, this includes the conservation of good existing environments. If those interested in building conservation take on this challenge, they will be speaking to a discourse that is of fundamental importance to our society. Capturing the values of the built environment, as it exists, requires the skills that conservationists have; this is part of good practice. The care of anything, especially old things, means anticipating what's going to happen next. How is the environment changing? Forethought is required. Looking back at history can also help in tracing what works in terms of ideas or the effect of time on materials. Curatorship means coming to terms with time, creating a Long Now. *'Connecting the past to the future through living in the present'*.

Another lesson that history might teach us is that there is nothing new; and, with this in mind, it is not surprising to discover a prophet for our 21<sup>st</sup> century predicament was expressing himself in utterly modern terms in the middle of the 19<sup>th</sup>:

*'The idea of self denial for the sake of posterity, of practicing present economy for the sake of debtors yet unborn, of planting forests that our descendants may live under their shade, or of raising cities for future nations to inhabit, never, I suppose, efficiently takes place among the publicly recognised motives of exertion. Yet these are not the less our duties; nor is our part fitly sustained upon the earth, unless the range of our intended and deliberate usefulness include, not only our companions but the successors of our pilgrimage. God has lent us the earth for our life; it is a great entail. It belongs as much to those who are to come after us, and whose names are already written on the book of creation, as to us: and we are no right, by any thing that we do or neglect, to involve them in unnecessary penalties, or deprive them of the benefits which it was in our power to bequeath'*

– (John Ruskin *The seven lamps of architecture*, 1848)

Colm Murray, Architecture Officer, The Heritage Council. February 2012