

'Person-Centredness' of the Built Environment

A Core Value of Sustainable Design

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Keywords : Sustainable Design, 'Person-Centredness', Social Wellbeing, Built Environment, 'Real' Construction Performance, Human Health, Safety.

1. Introduction :

These are interesting times ; the benefits of modern technology have bypassed and long overtaken the stirring thoughts, visions and catchcries of Architects at the beginning of the 20th. Century. However, at this time in Europe, we must now ask ourselves some difficult questions

" What should be the Design Agenda for the 'built environment' in the new millennium ? "

" Do we actually understand the 'real' needs and desires of 'real' people in an inclusive society ? "

It is **Sustainable Design** - the art and science of the design, supervision of related construction / de-construction, and maintenance of sustainability in the built environment - which is currently generating a quantum leap in the forward evolution of a more coherent design philosophy.

Principle 1 of the 1992 Rio Declaration on Environment and Development states

*' Human beings are at the centre of concerns for sustainable development.
They are entitled to a healthy and productive life in harmony with nature. '*

Deeply embedded, therefore, within this philosophy is the concept of '**person-centredness**', i.e. that core design value which places real people at the centre of creative concerns, and gives due consideration to their health, safety, and welfare in the built environment - it includes such specific performance criteria as : a sensory rich and accessible (mobility, usability, communications and information) environment ; fire safety ; thermal comfort ; air, light and visual quality ; protection from ionizing / electromagnetic radiation ; nuisance noise abatement ; etc. An important 'person-centred' design aid is the questionnaire survey, which is not only a very valuable source of information, but formalizes **meaningful consultation** between practitioners and end users.

Appendix A, a **Guideline Framework** on achieving equality of opportunity and social inclusion, which is based on a strategy produced by Directorate-General V of the E.U. Commission, shows how further essential elements of 'social wellbeing' also relate to **person-centredness** ; these include partnership between all sectors of society, consensus, transparency and openness.

This paper explores the rational and legal basis for 'person-centredness' of the built environment in Europe. Field work incorporating this innovative approach is also examined. Finally, a body of principles - a **European Charter** - is outlined which aims to ensure that new construction works, and renovated existing buildings, perform reliably, are adaptable, accessible and responsive, 'intelligently green' (fr: *intelli-verdure*), cost-effective and inherently sustainable.

2. Development of 'Person-Centredness' as a Design Concept

Towards the end of a difficult summer in 1996, the most extensive cross-sectional energy study of existing dwellings ever carried out in Ireland was completed. Its objective was to allow us to understand the issue of 'fuel poverty' amongst low income groups in the urban 'built environment' of Dublin, the capital city. As project co-ordinator and technical controller, I reported the study's principal findings to a Paris conference, organized jointly by CSTB and CIB, in June 1997.

As a designer, however, certain aspects of that study and an earlier energy survey in 1995, left a deep and lasting impression on me

◆ **Local Authority (Public) Housing in Dublin**^[a]

In demanding to observe the real energy performance of real buildings, the use of long wave (8 - 12 micron waveband) infra-red thermography opened up a world which hitherto had been closed off to full exploration because of an unquestioning reliance on limited 'reference' documentation and computer software. See **Appendix B** for some examples of thermal images.

Apart from the obvious benefit of reliable energy flow information, thermal imagery also showed us areas of dampness, porosity, and poor maintenance of a building's fabric - factors which not only influenced energy consumption, but also had a direct impact on human thermal comfort and health within the building.

A consideration of the real performance of buildings must, therefore, be incorporated into everyday design practice and education. Thermography, as an effective method of non-destructive testing, should be routinely used in building survey work, but also to validate computer software packages, and for quality control checks on energy related construction and/or products, as installed.

◆ **The Sessions House (1797) - A Major Historical Building in Dublin**^[b]

From May to September 1995, an extensive literature review led to the development of '**SEED**' - Sustainable Energy-efficient Environment-friendly Development - a concept which brought together, for the first time, three separate areas of concern, and crystallized the single idea that building energy performance cannot be evaluated in isolation from interrelated environmental and human factors. In practice, 'SEED' gave shape and resolution to these newly emerging methods of work.

Later that year, a detailed **energy survey** was carried out on The Sessions House (1797), Dublin. Part of the process of working with EN ISO 7730^[c] - a questionnaire survey - proved to be a revelation because of the robust information which it uncovered. It also facilitated, in a formal way, meaningful consultation with the building's occupants, and other users. In what might have been described as a 'problematic workplace', morale improved dramatically following the survey. From then on, the employees were working with us, instead of hampering our every action.

In the model proposed by the ISO Standard, thermal comfort is dependent on air speed (draughts), relative humidity (damp walls), radiant temperature (the ability of thick walls to heat up quickly), and air temperature. During the energy survey, it was found that if comfort was lacking in one aspect it was overcompensated for in another. For example, electrical misuse in one worker's office could finally be explained by the need to compensate for uncomfortable draughts with higher room temperatures (27-28 °C). The uneconomical use of portable electrical heaters, as heat sources throughout the building, then became understandable. In this case, the standard allowed us to comprehend what was happening, but it was the questionnaire survey which permitted us to see the building user as a real '**person**'. Once we examined the problem from the point of view of that person, solutions were quickly and comprehensively formulated. Recommendations in the completed energy survey report for this historical building reliably identified potential savings in energy costs of approximately **51%**, while working within the constraints of the **Venice Charter**.

An important 'person-centred' **design aid**, therefore, is the questionnaire survey which, if it is to be successful, must be carried out by an independent, competent, non-threatening individual, and must comprise both open and closed format questions in order to allow each 'person' the fullest possible opportunity to provide his/her views, opinions and information in their own way.

3. A Changing Legal Context in the European Union

All designers of buildings should now be more than familiar with the current framework of E.U. safety at work legislation which has been growing slowly, but surely, since the 1980's. See **Appendices C & D** for an important health related outcome from the 1996 housing energy study.

We have also observed the agreement and formulation of voluntary international treaties, conventions and declarations which relate directly to environmental / human health / social development concerns. Reference is made to only one of these^[d], as an example. Of direct interest, however, is the more rigorous definition of '**environmental impact**' in the Energy Charter Treaty^[e], which dates from December 1994

' Any effect caused by a given activity on the environment, including human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interactions among these factors ; it also includes effects on cultural heritage or socio-economic conditions resulting from alterations to those factors. '

The Amsterdam Treaty^[f] and the Kyoto Protocol^[g], will each in their different ways be major driving forces with regard to future modifications of the built environment in Europe. One immediate effect has been to place emphasis on the monitoring and targeting of actual, or 'real', performance in key industrial sectors. See the Presidency Conclusions from the Cologne European Council (Doc. Ref : SN 150/99 EN), of 3rd - 4th June 1999.

4. Sustainable Design & Construction ~ Progress To Date

Sustainable Design should not, therefore, be regarded as merely a style, or a passing fashion. In the light of a changing E.U. legal context, it represents a much needed, and necessary, quantum leap in the evolution of a modern design philosophy for the 'built environment'

- CIB Publication 225 - 'Sustainable Development and the Future of Construction'

Published by the International Council for Research and Innovation in Building and Construction (**CIB**) in May 1998. This introductory document comprises 14 reports from different countries around the world, with an international synthesis.

- 'European Charter on Sustainable Design & Construction'^[h] - Updated in 2000

Formally adopted at a conference in Dublin during November 1998, the European Charter comprises 27 Principles (design guidelines) which refer to, and are directly underpinned by, existing energy / environmental / sustainable development related legislation in the European Union. This document has now been referenced in CIB Report Publication 237 (see below).

- Construction Related Sustainability Performance Indicators

The purpose, scope and operational time frames of performance indicators are set out in Principle 26 of the European Charter. Within CIB W82 : 'Futures Studies in Construction', it has been agreed that construction related indicators should dovetail with work which is being co-ordinated, at global level, by the United Nations Commission on Sustainable Development, and by Eurostat at European level. See **Appendix E**. A national research project, initiated by the Forum on Sustainable Construction in Ireland, will commence shortly. This project, along with similar projects in many other countries, will be co-ordinated by CIB W82.

- CIB Report Publication 237 - 'Agenda 21 on Sustainable Construction'

Recently published (July 1999), in association with CERF, RILEM, IEA and ISIAQ, by the International Council for Research and Innovation in Building and Construction (**CIB**). This document is an analysis of the future directions, and optimal ways to engage, in international collaboration on sustainability related research and innovation in the global construction sector.

5. Answers to Both Initial Questions

Having acted as co-ordinator and technical controller on an extensive Energy Monitoring and Targeting Project, also in The Sessions House^[1], I have no doubt when I state that the concept of '**person-centred**' design, as a critical component, or 'core value', of Sustainable Design, informed both the general direction and the detailed implementation of the project. See **Appendix F**. In the second quarter of 1996, the first Energy M & T computer software package in Ireland or Britain, based on EN ISO 7730, was developed.

To return to those questions posed at the beginning of the paper

" What should be the Design Agenda for the 'built environment' in the new millennium ? "

It is **Sustainable Design** which will steer the future course of an innovative approach to construction. For the first time in the European Charter on Sustainable Design & Construction, a comprehensive scope of concern, relating to ethics and values, is outlined for the subject; a rational decision making framework is presented; human development, social justice and inclusion, environment and energy related issues are discussed in a coherent format; and finally, technical terms are defined for better communication.

Principle 1 of the European Charter states :-

'Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.'

Movement towards a 'person-centred' and 'socially inclusive' approach in the planning / design / construction of a built environment, i.e. placing real people, their needs and responsible desires at the centre of creative endeavours, should be encouraged and fostered by every key sector in society.

The method of work in the various processes of planning / design / construction should be widely multi-disciplinary. An active dialogue between practitioners, researchers and end-users, based on meaningful consultation, partnership, and consensus should become the standard.'

'Person-Centredness' of the Built Environment, as a core value of Sustainable Design, must however be counterbalanced by an intrinsic value of Sustainable Development

'All systems (human / non-human, living / non-living), which are sufficiently viable and irreplaceable, have an equal right to present and future existence and development.'
Bossel, 1978.

" Do we actually understand the 'real' needs and desires of 'real' people in an inclusive society ? "

As building designers and practitioners, researchers, managers, service providers, etc. - no, we don't even know the people who use our buildings. But soon, we will be forced to do so! Preliminary construction related sustainability performance indicators must shortly be developed in the European Union, under all four aspects of sustainable development, i.e. **Social, Economic, Environmental, and Institutional**. Furthermore, references to 'people', in design methods, must no longer be assumed, or understood, to mean average, token, notional or standard human beings - but must include every 'person', whether they be young, elderly, disabled or able-bodied, male, female, thin, tall or short, etc.

6. References

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7. Appendices (Available on our WebSite : www.sustainable-design.com)

- A Guideline Framework - Achievement of Equality of Opportunity & Social Inclusion for Every Person in the European Union
- B Selection of Exterior and Interior Infra-Red Thermal Images (8 to 12 microns)
- C Questionnaire Survey - Residents' Responses with regard to Indoor Thermal Comfort
- D Questionnaire Survey - Frequency of Common Illness in Dwellings
- E Fundamental Matrix of Construction Related Sustainability Performance Indicators
- F Schedule of Sensors and Controls in an Energy M & T Project - The Sessions House